Run 2 (2001-2002) Manual

Welcome to the PHENIX *Run 2 (2001-2002)* Manual

Version 0.5, May 16, 2001

Print Out version is not yet available.
This manual is still under-development, and most of it is copied from the RUN-00 Manual compiled by Achim Franz.
Note that some of the content can be outdated.

Status of each section as of 05/14/01.

- Orders: Updated. (Need more inputs from subsystems.)
- Alarms: Updated.
- Contacts: Updated.
- 1008: Updated.
- Gas: Updated.
- HV: Updated.
- LV: Updated.
- Online: Not updated. very badly outdated.
- RCMS: Updated.
- Trigger: Not updated. Very badly outdated.

Shift person should read Orders section.

If you need to contact to someone, go to Contact section.

If an Alarm goes off, go to Alarms section to find out what to do.

Links

Run-2 Home Page
PHENIX run log

Version History

0.5	05/16/2001	HV page updated.
0.4	05/14/2001	LV and RCMS page updated.

0.3	05/13/2001	1008 page updated.
0.2	05/08/2001	Gas page updated. New standing orders almost completed
0.1	05/05/2001	Alarm page updated. Contacts updated.
0.0	05/03/2001	Initial version from Run2000 Manual

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

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Standing Orders

Navigation

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Shifts 

General comments:

- Arrive for your shifts about 15 min early and be prepared to stay 15 min longer for an efficient shift changeover.
- Read the PHENIX Run-2 Manual and get familiar with PHENIX Operation.
- Complete the training needed for taking shifts before your shift starts.
- If you need to find subsystem experts, find them in On Call Lists.
- If an alarm goes off, go to alarm section.
- Presently, we have only two person shift, SL and SA1. SA1 is responsible for the tasks for SA2 until the regular 4-man shift starts.

Task lists:

- Read the standing oders of all subsystems below. Note that the standing order can be changed. Reload the page to update the order.

- **Log in to Online Log Book.**
- **Turn off all subsystems with no standing order if no one from the subsystem is working at the counting house.**
- **Monitor LV/HV/Temperature of the subsystems that are turned on by the standing order.**
- **Print gas system checklist and check gas system for every 4 hours.**
- **Record every Alarm in Online Log Book.**
- **Record all Unusual Event in Online Log Book.**
- **(SL) Write a Shift Summary at the end of the shift in Online Log Book.**

Tasks for Shifters:

All Shift Leaders should have a look at the following "R2A2" Document (**R**ole, **R**esponsibilities, **A**ccountabilities and **A**uthorities) which lays out the job of a shiftleader as seen by the C-A Department, available as: HTML, MSWord and PDF.

SL: Shift Leader	SA1: Shift Assistant 1:	SA2: Shift Assistant 2:	OS: Offline- Shift Person
1. Personnel Safety (LEC) 2. Equipment Protection 3. Data Taking 4. Contact for MCR	1. Deputy to Shift Leader 2. High Voltage trip monitoring 3. RHIC beam conditions monitoring	1. Deputy to SL and SA1 2. Gas System Monitoring 3. RCMS / LV / Temp.	1. Offline software 2. Help with offline questions via "Phenix- needs-l" 3. Data Production / RCF Monitoring 4. Printers/ Terminals in Counting House

Gas

- General Comments: Stable Gas Flow. No Known Problems.
  Flammble Gas flowing to DC, PC and TEC.
- Call experts if any reading is out of tolerance.!!! Michael Sivertz - 5/4/01

High Voltage

- Record any event of crash or hang of the HV control system in /home/phoncs/hv/status.txt. For more detailed instruction, see hvorders.txt by John Haggerty.

Magnets

Standing orders for the Phenix Magnets

The magnets should only be operated by the Run-Coordinator (RC), A.D.Frawley, or Achim Franz. Any changes to the magnetic field has to be discussed and approved by the RC.
To see if the magnets are on, check the upper left corner of the SMCS panel. A bright blue LED indicates that the powersupply (PS) is enabled, the indicator window next to it is lit when the PS is switched "ON", this will also start the warning lights in the IR, but it does not mean the field is actually on.
For the moment the only way to see if there is a non-zero field in the magnets is to pop-up the "HallProbe" window on the RMC PC and see if any of the hall probes read values > 0.2.

Achim Franz, last modified May 08, 2001

DAQ

- General comments:
  People are free to use DMCs for data taking. There are standalone running instructions on the DCM web page.
- No one is allowed to put boards in or take boards out without explicit permission from Chi, Mickey, or J. Nagle.
- If the cooling water is turned off, turn off DCM racks.

(from e-mail by J. Nagle on 05/08/01)

Global Level 1

- Trigger documentation is kept on the Run Coordinator's web page and paper copies are kept near the run control computer. Selecting triggers for a run is the SL's responsibility while we are "tuning up" with beam (these will be fixed for data taking) or will be done by a member of the DAQ group during development work.
- No one but an authorized Level-1 expert should remove or insert boards into the Level-1 crates! If you need help with hardware in the GL1, BBC-LL1, or MuID LL1 crates call:
  Sergei Belikov (home 924-0458, cell phone 631-398-3985, BNL office x7212) or
  John Lajoie (home: 515-963-9818 or 515-963-0249, ISU office 515-294-6952, cell phone 515-963-9818, BNL office x7212).

Beam Beam Counter 

Standing Order for BBC

At this moment, the default status of HV and LV should be OFF.

Only when BBC experts in the following list are working, the status could be changed.

Once stable operations have been established, we will update this standing order.

BBC expert list

Name	Office phone	Home phone	Cover item
Kensuke Homma	Ex. 4990	Ex. 1059	All
Hiroaki Ohnishi	Ex. 7053	924-6548	All
Takashi Hachiya	Ex. 7801	Ex. 1007	Online monitor
Tomoaki Nakamura	Ex. 7801	Ex. 1007	Readout
BBC trailer house	Ex. 5792		

Drift Chamber 

- General comments:
  in case of any trouble with LV/HV/Monitoring call the expert from the whiteboard list. If none is available call T.Hemmick.
- Low Voltage:
  ON. Call expert in case of trouble.
- HV:
  OFF by default. If channel trips, follow the trip recovery procedure. Call expert in case of difficulties.

From e-mail by T. Hemmick on 5/9/2001 May 09, 2001

Muon ID 

- General Comment: The standard operating conditions for the MuID are to have CO2 gas flowing according to the MuID section of the PHENIX Gas Checklist, HV on all of the non-disabled channels, and LV on the FEM. If the gas flow to the MuID is interrupted for more than 4 hours, then the MuID HV should be turned off and remain off until a MuID expert can determine whether the HV can be turned back on.
- GAS: As usual, the Shift Assistant 2 shall fill out the entries concerning MuID in the PHENIX Gas Checklist, note abnormal values in the electronic logbook, and contact experts in case of problems.
- HV: The HV settings are adjusted by MuID experts. If the MuID HV trips, then shift crew should make a note of the time it tripped in the electronic log book. The following rule applies during the present commisioning period: AT NO TIME SHOULD A SHIFT PERSON RESET THE MuID HV WITHOUT SPECIFIC INSTRUCTIONS TO DO SO BY THE MuID HV EXPERTS. If the HV is turned off, it is to remain off until a MuID expert can reset it.
- LV: OFF, call expert in case of trouble. Be sure the rack temperatures are OK - the temperature alarms really mean something now. The LV power shall only be turned on by MuID experts and properly trained DAQ and PHENIX Shift personnel. The shift crew may turn OFF the MuID LV if necessary. If the LV power is turned off during a shift, the shift crew should note the time in the electronic log book.

- MuID On-Call: Atsushi Taketani (5/7/01-5/14/01)
- MuID Experts (alphabetically):
  Vince Cianciolo: Office=-4280, Home=-1023 (5/8/01 to 5/17/01 and 5/29/01 to 8/3/01)
  Andy Glenn: Office=-4281, Home=-1032
  Jason Newby: Office=-4281, Home=-1032
  Ken Read: Office: 865-574-5347, Pager=888-875-9248
  Hiroki Sato: Office:-8087, Home=-1010
  Atsushi Taketani: Office=-3838, Home=-1004, Pager=-3456-8521-yourextension

Last update 5/14/01 by Vince Cianciolo

Muon Tracker 

```
   muTr subsystem standing orders (5/3/01 - MJL)
   =============================================

* LV is on and should be left on. If any LV or racks trip they should be
  left off and noted in the logbook. LV control is called "SMT". Also if cooling
  water trips off the muTr LV should be turned off.

* HV is on at 1300 volts for chamber conditioning. It should be left on
  and any channel that trips should be left off and noted in logbook.

* Currently many calibration runs are being taken using stand-alone run control
  for long periods of time most of the time. Contact Mike Leitch, leitch@lanl.gov
  or 924-4542 (apartment) if you have any issues regarding this.

* For any other serious issues please call the people on the muTr expert list:

 Rusty Towell   x7209   205-9083  towell@bnl.gov        (chambers, gas, HV)
 Jiro Murata    x2731   689-7592  jiro@bnl.gov          (gas)
 Andrew Hoover  x3984   776-2087  ahoover@kaon.rhic.bnl.gov  (LV, FEE, ArcNet)
 Ming Liu       x3773   924-7417  ming@bnl.gov          (LV, FEE)
```

Multiplicity Vertex Detector 

MVD standing orders

Summary: Check the temperatures of the LV modules in the MVD rack every two hours. If any temperature is above 40, turn MVD LV off.

Details:
What is being left on?
MVD low voltage. See mvd1.2 on the low voltage control monitor. You should see read lights (not green) in AB1, AB2, CD1, CD2 modules, plus "ch 5" of the U module.
What is being monitored?
The temperatures in the LV rack. Check approximately every 2 hours.
How to tell if it is OK?
The "temp" at the bottom of each "module" should be less than 40 degrees C.
What to do if there is a problem?
Turn MVD Low Voltage off. Click on "6U crate ON" to turn it off. Click on "ch 1" in the "CD1" module and on "ch 1" in the CD2" module. All the red lights should turn green. Send email to sullivan@lanl.gov if you do this.

Contact list

updated 4-May-2001 10:35AM
John Sullivan

PbGl Calorimeter 

Lead Glass 

- ## Status:

  Commissioning of FEM. The default state of the PBGL is OFF when no one from PBGL present.

- ## Low Voltage:

  OFF.

- ## High Voltage:

  OFF.

PBGL On-Call List:

Terry Awes ...x4279(office) 1-516-398-6348 (cell)
Sasha Vinogradov ...x3912(office) x1034 (home)

Last update May 7, 2001 by Terry Awes

PbSc Calorimeter 

PbSc Calorimeter

Current status:

HV testing

Installation of FEM's

Commissioning of FEM's

Standing Orders:

HV:

Default: ***OFF***

LV:

Default: ***OFF***

Laser:

Default: ***STNDBY or OFF***

Experts on call:

E.Kistenev	**7502**	**(631) 369-7265**	**(631) 495-6110**
A.Durum		**(631) 344-1000**	
A.Yanovich		**(631) 344-1000**	
I.Shein		**(631) 344-1000**	
S.Stall (laser)	**5331**		

Updated by E.Kistenev, 5/8/01

Pad Chamber 

- General Comments: PCW available for DAQ.
- Low Voltage: PCW ON. In case of overheat (temperature indicator flashes red) turn OFF LV and make a note in the logbook.
- High Voltage: PCW ON at nominal voltages (PC1:1700 V, PC2: 1800 V, PC3: 1880 V). In case of trips, do not try to turn back on, just make a note in the logbook.
- PC Experts:
  Mike Sivertz...x6102 (office)
  Mike Sivertz...(631) 878-9020 (home)
  Karim El Chenawi...x4933 (trailer)
  Karim El Chenawi...(631) 821-6094 (home)

  Karim El Chenawi - 05/17/01

Ring Image Cherenkov 

Status:
Commisioning of FEE. The default state of the RICH is OFF. We will update the standing order when a stable operation is established

If there is no RICH person working on the system, then
HV: OFF
LV: OFF
RCMS(temp. monitor): ignore (as LV is OFF)
Alarms: Call RICH expert in On-Call list

Y. Akiba -- 05/05/01

Time Expansion Chamber 

TEC STANDING ORDERS For Pre- RUN 02

General Comment:

The standard operating conditions for the TEC is to have P-10 gas flowing at ~ 15 lpm, HV on the anode and drift window wires and LV on the FEM and Planes 0-3 of the Preamp/Shaper supply. If the gas flow to the TEC is interrupted for more than 15 minutes then the TEC HV should be turned off and remain off until a TEC expert can determine when the HV can be turned back on. In addition, there is a list of TEC EXPERTS that can be found here.

TEC HIGH VOLTAGE SYSTEM:
As of May 4.

The TEC is currently bringing up the voltages to all sectors in the east arm. If a channel trips, disable the channel and leave it OFF.
An email should be sent to pisani@bnl.gov AND achim@bnl.gov stating when and which channel tripped.

TEC LOW VOLTAGE:

For now. The TEC low voltage can only be operated by a TEC member. If the voltage is found to be on without a member present, all voltages *(All Pl and FEM*) should be powered down as well as rack power.

LV problems:

If a power supply flashes **RED**, monitor the channel. If the channel temp continues to increase, contact a LV power supply expert.. A flashing red light is a warning to monitor the temp of the supply. If the "F" supply temp monitor reads above 50, turn all PL channels above that button off. IF a "G" supply reads above 50 or a "P" supply reads above 60. Turn off all LV in that sector. (Pl1, PL2, PL3, and PL4. **AND** the FEM button.). Contact a TEC member if any supply had to be turned off.

There is also a readout of the TEC Rack air temp. If this temp reaches 40C it will flash **RED**. Monitor the temp if it continues to increase. If it increases above 45C, turn off **ALL LV SECTORS .** (Pl1, PL2, PL3, and PL4. **AND** the FEM button for ALL sectors). This is usually caused by a problem with the cooling water supply. Contact a TEC member when this happens.

(Last updated by Robert Pisani May 4 2001)

Time of Flight 

- # General Comments:

  Commissioning of FEM. The default state of the TOF is OFF.

- # Low Voltage:

  OFF.

- # High Voltage:

  OFF.

- # FEM:

  OFF. FEM Calibrations (time and charge scan) are on going.

TOF On-Call List:

TOF booth @ Trailer ...x6254

Tatsuya Chujo ...x5152(office) x1157(home)
Susumu Sato ...x2679(office) x5614(pager)

Tatsuya Chujo, (15:35) May06, 2001

Zero Degree Calorimeter 

Please notify

- Hiroaki Ohnishi
- Alexei Denisov x2201, 7502 when John is ready for them to turn on HV of ZDC.
  (Based on e-mail from Sebastian While on 5/07/01)

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

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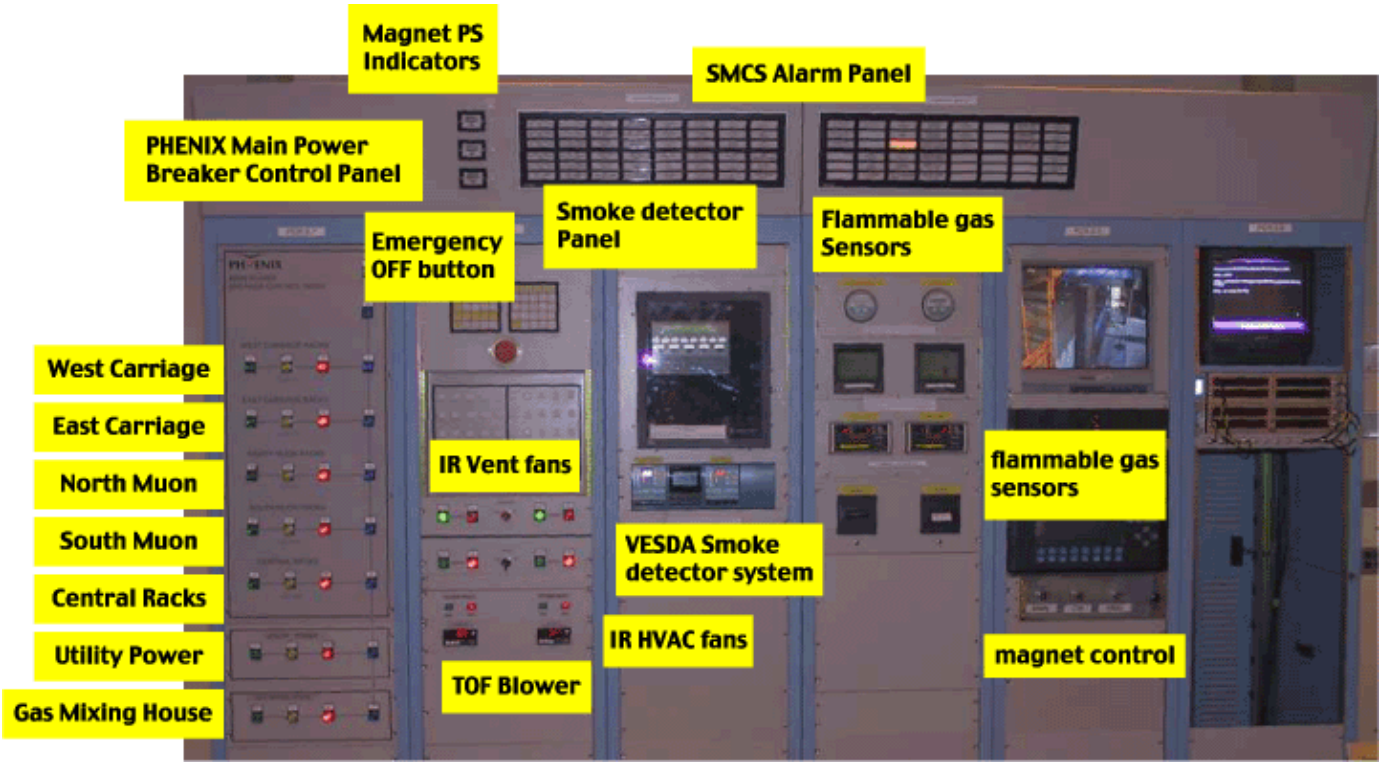
Alarms

INSTRUCTION TO SHIFT ON ALARM
If an alarm goes off:

- **Push ACK to silence the alarm.**
- **Record it in the LogBook (Which alarm, When, Action taken).**
- **Find the right response to the alarm in Alarm Response Table below.**
- **Push RESET if the problem is solved.**

For further details, read the alarm manual below.

Alarms are located at the South Wall of the PHENIX Controll Room. The picture of the South Wall is shown below.



At the Top of the Wall, there are two Alarm panels. In the figure Above, it is indicated as "SMCS Alarm Panel". A enlarged view of the panel is shown below.

Just below the **Panel A** and at the top of **PCR.0.3** are three buttons for **ACK/RESET/TEST**.

- **TEST** can be pushed anytime and held for 10-20 seconds to hear both types of alarm and see if all lights are working.
- **ACK** is pushed to acknowledge a problem, which is signaled by the continuous horn sounding and a blinking light(s) where the problem is. Push **ACK.** to silence the horn and then look at the display and consult the table below to see what to do.
- **RESET** is pushed after you clear the problem. When you fix the problem, the intermittent horn sounds and the PASS light starts blinking, **RESET** will silence the intermittent horn.

To help find the right response the following table indicates the currently activated panels.

Alarm Response Table

A printout version of the table is also available in a binder in the Couting Room.

PHENIX Alarm Panel							
The panel below represents the Alarm Indicator panel in the CR. Click on the window you want information about.							
Panel A (left)							
West Carriage Main Power Breaker Trip	West Carriage Main Power Breaker Fail	East or West Carriage High Level Smoke	MuTr South High Level Smoke	BNL Fire IR Heat Sensors (Zone 2)	East or West Carriage High Level Gas	GMH High Level Gas	IR Emergency Off Activated
East Carriage Main Power Breaker Trip	East Carriage Main Power Breaker Fail	West Carriage Low/Mid Level Smoke	MuTr South Low/Mid Level Smoke	BNL Fire HSSD Level 1 Smoke (Zone 3)	East or West Carriage Low Level Gas	GMH Low Level Gas	GMH Emergency Off Activated
North Muon Main Power Breaker Trip	North Muon Main Power Breaker Fail	East Carriage Low/Mid Level Smoke	MuTr South Smoke Detector Trouble	BNL Fire HSSD Level 3 Smoke (Zone 3)	Carriage Gas Detectors Malfunction	GMH Gas Detectors Malfunction	GMH Vent Fan Trouble
South Muon Main Power Breaker Trip	South Muon Main Power Breaker Fail	Carriage Smoke Detector Trouble	MuTr South Smoke Detector Isolated	BNL Fire GMH Sensors (Zone 30)	IR Return Air/MuID High Level Gas	IR (PASS Floor High Level Gas	GMH Low Level Oxygen
Central Tracking Main Power Breaker Trip	Central Tracking Main Power Breaker Fail	Carriage Smoke Detector Isolated	ToF Sector 0 Smoke	ToF Sector 1 Smoke	IR Return Air/MuID Low Level Gas	IR HVAC/Vent Fans Trouble	MuTr Water Leak Detected

Utility Power Main Breaker Trip	Utility Power Main Breaker Fail	GMH Main PowerBreaker Trip	GMH Main Power Breaker Trip Fail	ToF Fire Suppression Activated	IR Return Air/MuID Gas Detectors Malfunction	IR HVAC Vent Fans Off	Phenix Bypass Active
Panel B (right)							
Electronics Racks Smoke detected	Electronics Racks/TOF Smoke detected	IR Temperature High/Low	West Carriage Trench Water detected	MMN Power Supply Trip	-	Methane Valve Fail to Close	DC/PC Gas Control Rack Trouble
Electronics Racks Heat detected	-	IR Humidity High	Central Magnet Trench Water detected	CMO Power Supply Trip	-	Ethane Valve Fail to Close	TEC Gas Control Rack Trouble
Electronics Racks Water detected	-	IR HVAC Chiller Trouble	Detector Water High Temp./Makeup	MMS Power Supply Trip	-	Isobutane Valve Fail to Close	RICH Gas Control Rack Trouble
-	VESDA Power Supply Trouble	IR Crash Cord Pulled	Magnet Power Supply Water High Temp./Makeup	-	-	-	MuTr Gas Control Rack Trouble
-	LCVS Trouble	Chipmunk Alarm/Fail	Magnet Water flow low	-	-	-	MulD Gas Control Rack Trouble
-	ToF Blowers Trouble	Substation 1008A or 1008B Ground detected	Power Supply water flow low	-	-	-	-

If you have comments or suggestions E-Mail me at: Achim@BNL.GOV

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Run-2001 version edited by Y. Akiba akiba@BNL.GOV

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Contacts

Contacts and phone numbers

all 4 digit numbers are BNL extensions: (631) 344 xxxx

BNL | Run Organization | On Call Lists | 1008 Complex | PHENIX Management

BNL

Emergency	**2222 or 911**
C-A Departement Main Control Room (MCR)	**4662**
Fire Department Assistance	2350
General Information (recorded message)	4636
Plant engineering shift supervisor	Pager (3456) - 0519

- http://inform.bnl.gov/PHONEB/phonehome.html

Run Organization

	Start	End	Name	Ext./pager	home/cell	e-mail
RC	1/1/2001	3/1/2002	Anthony D. Frawley	7171 (pager)	399-0077 (home) 8414 (office)	Frawley@fsuhip.physics.fsu.edu
PC	5/2/2001	5/15/2001	Y. Akiba	7170 (pager)	3891 (office)	

PC = Period Coordinator
RC = Run Coordinator

On Call List

PHENIX On Call List May 2001

System	Granule/Acronyms	Contacts	email	Office phone	Home phone	Pager	Cell phone	Updated
Beam-Beam Counter	BB	Kensuke Homma	homma@hepl.hiroshima-u.ac.jp	4990	344 1057			2001.04.24
		Hiroaki Ohnishi	ohnishi@bnl.gov	7053	924 6548			2001.04.23
Zero Degree Calorimeter	ZDC	Sebastian White	white1@bnl.gov	5488				2001.04.23
Multiplicity Vertex Detector	MVD	John Sullivan	sullivan@lanl.gov	7622	929 5751			2001.04.23
Drift Chamber	DC.E, DC.W	Vlad Pantuev	pantuev@skipper.physics.sunysb.edu	632 8112	467 1917			2001.04.23
		Sergey Butsyk	butsyk@rcf.rhic.bnl.gov	8419	344 1000			2001.04.27
		Tom Hemmick	hemmick@skipper.physics.sunysb.edu	632 8111	689 1291		516 982 1403	2001.04.27
		Johann Heuser	Johann.Heuser@sunysb.edu	5455 or 632 4482	631 751-6634		631 748 2780	2001.05.05
Pad Chamber	PC.E, PC.W	Mike Sivertz	sivertz@bnl.gov	6102	878 9020			2001.04.23
		Karim El Chenawi	chenawi@bnl.gov	4933	821 6094			2001.04.23
Time Expansion Chamber	TEC.E	Rob Pisani	pisani@bnl.gov	4318	738 8298			2001.04.23
		Xinhua Li	lixh@tece02.rhic.bnl.gov	7266	205 9319			2001.04.24
Time of Flight	TOF.E	Susumu Sato	ssato@bnl.gov	2679/6254		5614		2001.04.23
		Tatsuya Chujo	chujo@bnl.gov	5152/6254	1157			2001.04.23
Ring Imaging Cerenkov Counter	RICH.E, RICH.W	Yasuyuki Akiba	akiba@bnl.gov	3891	1106			
Ring Imaging Cerenkov Counter	RICH.E, RICH.W	Takao Sakaguchi	takao@phenix.cns.s.u-tokyo.ac.jp	4999	344 1174			2001.04.23
Lead Scintillator Electromagnetic Calorimeter	EMC.E.T, EMC.W.B, EMC.W.T, PBSC	Edward Kistenev	kistenev@bnl.gov	7502	344 7265			2001.04.23
Lead Glass Electromagnetic Calorimeter	EMC.E.B	Terry Awes	awes@bnl.gov	4279	344 1023		516 398 6348	2001.04.24
		Sasha Vinogradov	vin@bnl.gov	3912	344 1034			2001.04.24
Muon Tracker	MUTR.S	Rusty Towell	towell@bnl.gov	7209	205 9083	4133		2001.04.23
		Jiro Murata	jiro@bnl.gov	2731	689 7592			2001.04.23

		Andrew Hoover	ahoover@kaon.rhic.bnl.gov	3984	776 2087			2001.04.23
		Ming Liu	ming@bnl.gov	3773	924 7417			2001.04.23
Muon Identifier	MUID.S	Atsushi Taketani	taketani@bnl.gov	3838	1004	8521		2001.04.27
Magnets	CM, MMS	Achim Franz	afranz@bnl.gov	4750	722 3502			2001.04.27
Gas		Carter Biggs		7515	654 0411			2001.04.27
		Mike Sivertz	sivertz@bnl.gov	6102	631 878 9020			
Operation Manager		Ed O'Brien	obrien1@bnldag.ags.bnl.gov	4318	331 5378			2001.04.27
RHIC Liaison Physicist		Yousef Makdisi	makdisi@bnl.gov	4932				
RHIC Liaison Engineer		Charlie Pearson	pearson1@bnl.gov	7641		4251		
Run Coordinator		Tony Frawley	frawley@fsuhip.physics.fsu.edu	8414		7171		
Data Collection Modules	DCM	Jamie Nagle	nagle@nevis1.nevis.columbia.edu	914 591 2804				
		Mickey Chiu	chiu@nevis1.nevis.columbia.edu					
		Cheng-Yi Chi	chi@nevis1.nevis.columbia.edu	914 591 2832	914 528 7803			
Timing System	MTM, GTM, PPG	Steve Adler	adler@ssadler.phy.bnl.gov	5682				
		John Haggerty	haggerty@bnl.gov	2286	689 2991			2001.04.23
Level 1	GL1, LL1	John Lajoie	lajoie@iastate.edu	515 294 6952	515 963 9818		515 480 8312	2001.04.23
		Sergei Belikov	belikov@rcf.rhic.bnl.gov	7212	924 0458		631-398-3985	2001.04.23
ARCNET		John Haggerty	haggerty@bnl.gov	2286	689 2991			2001.04.23
Event Builder	EVB, SEB, ATP	Brian Cole	cole@nevis1.nevis.columbia.edu		914 243 0744		914 522 2016	2001.04.27
		Sean Kelly	kelly@nevis1.nevis.columbia.edu		212 666 1333			2001.04.27
High Voltage	HV	John Haggerty	haggerty@bnl.gov	2286	689 2991			2001.04.23
Low Voltage	LV	Steve Boose	boose@bnl.gov	2897	447 9216			
		John Haggerty	haggerty@bnl.gov	2286	689 2991			
Safety Systems	SMCS, RMC	Paul Giannotti	giannott@bnl.gov	3815	821 3486	5821		
		Frank Toldo	fatoldo@bnl.gov					
		John Haggerty	haggerty@bnl.gov	2286	689 2991			2001.04.23
Online Computing	ONCS	Martin Purschke	purschke@bnl.gov	5244				
		Chris Pinkenburg	pinkenbu@bnl.gov	5692				
Online Software		Steve Adler	adler@ssadler.phy.bnl.gov	5682				
		Ed Desmond	desmond2@bnl.gov	4768				

1008 Complex 

		Ext./pager	home/cell	E-Mail
Counting Room	Phone (5 lines)	7821, 7815, 7834, 8360, 3652		
	Fax	4592		
	John Haggerty	7821	689 2991	Haggerty@bnl.gov
	Steve Boose	2897		
	Paul Gianotti	3815 7168 (pager)	821 3486	Gia@bnl.gov
	Frank Toldo	7788 4207 (pager)	732 5950	FAToldo@bnl.gov
Work Control Coordinator	Anthony D. Frawley	7171 (pager)		Frawley@fsuhip.physics.fsu.edu
Liason Physicist	Yousef Makdisi	4932 (pager)		Makdisi@bnl.gov
Liason Engineer	Charles Pearson	7641 4251 (pager)		Pearson@bnl.gov
Assembly Hall		3652		
PASS phones		8043		
Gas Mixing House		8480		

Person in charge (deputy work Control Coordinators)				
CR and RR	Paul Gianotti	3815 7168 (pager)	821 3486	Gia@bnl.gov
IR and AH	Salvatore Marino	3704		Marino@bnl.gov

Which Phone rings where in 1008

Location of the phone	Extension number	Phone # that rings this phone
Kitchen area	7815	7821, 7815
Control Room North	7821	7821, 7815
Control Room South	7821	7821, 7815
Rack Room East	7815	7821, 7815
Rack Room West	7815	7821, 7815
Electronics Area	7815	7821, 7815
Conference Room	7834	7834, 7821, 7815
Assembly Hall	3652	3652
IR West	8360	8360
IR East	8360	8360
Gas Mixing House	8480	8480, 7821, 7815

Which Phone rings where in the trailer

Assign cubical	Extension number
Run Coordinator	8414
Paul Gionatti	3815
EMCal	8410, 8420
Tim Thomas	8411
Tom Shea	8412
BBC	5792
TEC	8415, 8417
PadChamber	4933
MVD	4803
TOF	6254
RICH	8421
DriftChamber	8419
DCM	8418
EventBuilder	5181
Muons	5651, 5315, 5246
Phones at the door	5819, 5934

PHENIX Management and Support 

Spokesperson	Bill Zajc	4443	Zajc@columbia.edu
Deputy Spokesperson	Glenn Young	7825	Young@mail.phy.ornl.gov
Operations Manager	Edward O'Brien	4318	EOBrien@bnl.gov
New Projects/Upgrades Manager	Axel Drees		
PHENIX Office Manager	Brant Johnson	4552	Brant@bnl.gov
PHENIX Office Staff	Donna Earley	4007	Earley@bnl.gov
	Mariette Faulkner	4064	Faulkner@bnl.gov
	Fax number	3253	
Training/Safety Coordinator	William Lenz	7117	WLenz@bnl.gov
http://www.phenix.bnl.gov/htbin/phenixphonebook			

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

- Main
- Orders
- Alarms
- Contacts
- 1008
- Gas
- HV
- LV
- Online
- RCMS
- Trigger

1008

Navigation

1008 Complex	Office Trailer	Control Room (PCR)	Rack Rooms (PRR)	Racks in PCR, South Side	Racks in PRR, East Row	Racks in PRR, Computers	Racks in PRR, North Row	Racks in PRR, Middle Row	Racks in PRR, South Row	Rack Room Wall Panels

Layout of the 1008 Complex

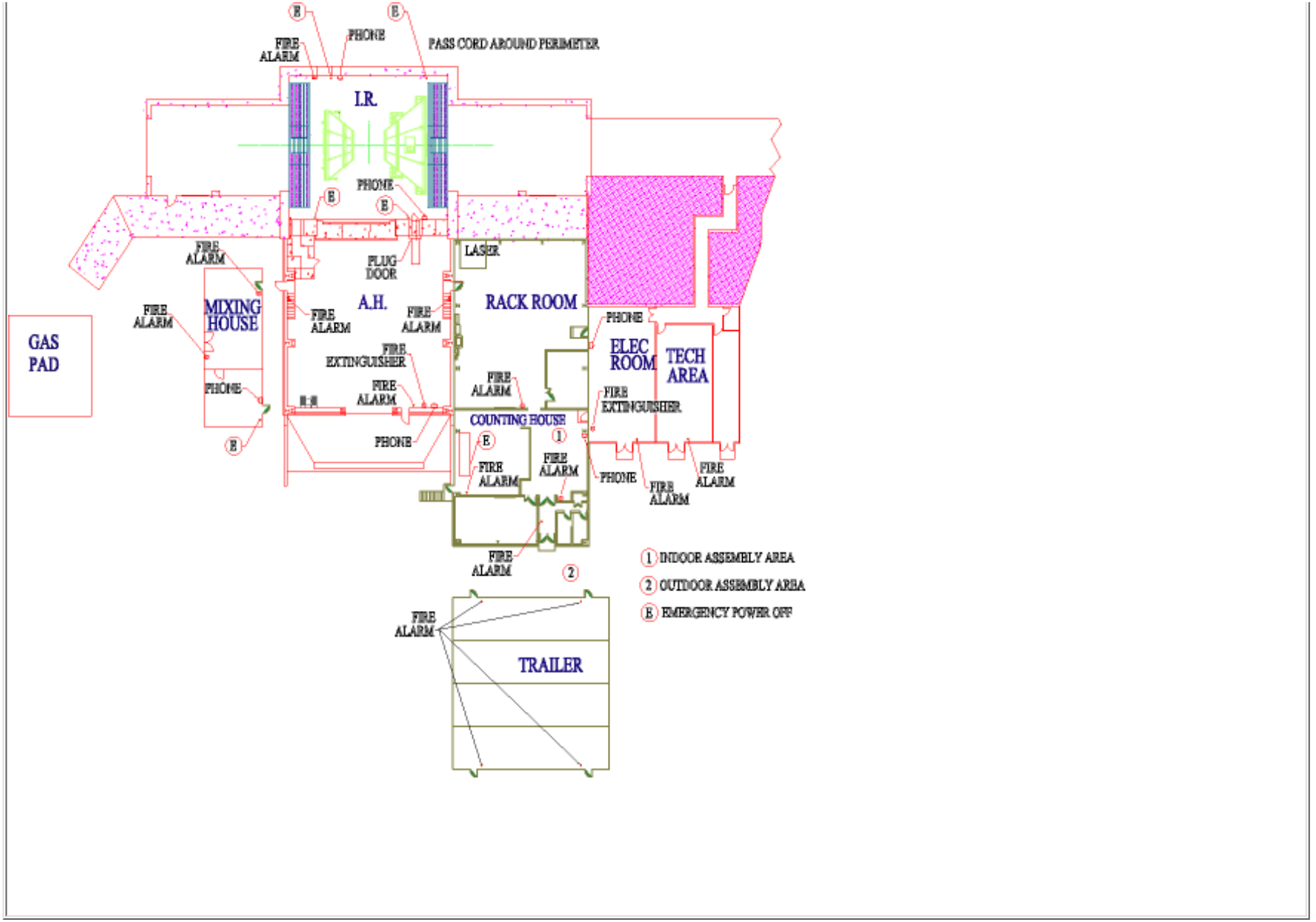
Main areas are:

- Trailer, office area (1008E).
- Counting Room (CR), with main terminal area, SMCS Alarm system, conference room and coffee area(1008).
- Rack Room (RR), Readout electronic racks, breaker boxes, transformers, ...(1008).
- Elect Room (ER), Rack building, system tests, ...(1008).
- Tech Area (TA), office space for techs (1008A).
- Assembly Hall (AH), where we built all the pieces (1008).
- Interaction Region (IR), where it's all happening (1008).
- (Gas) Mixing House (GMH), name says it all (1008F).
- Gas Pad (GP), gas storage area

A more detailed drawing can be found on the Plant Engineering "Key Plan" page.

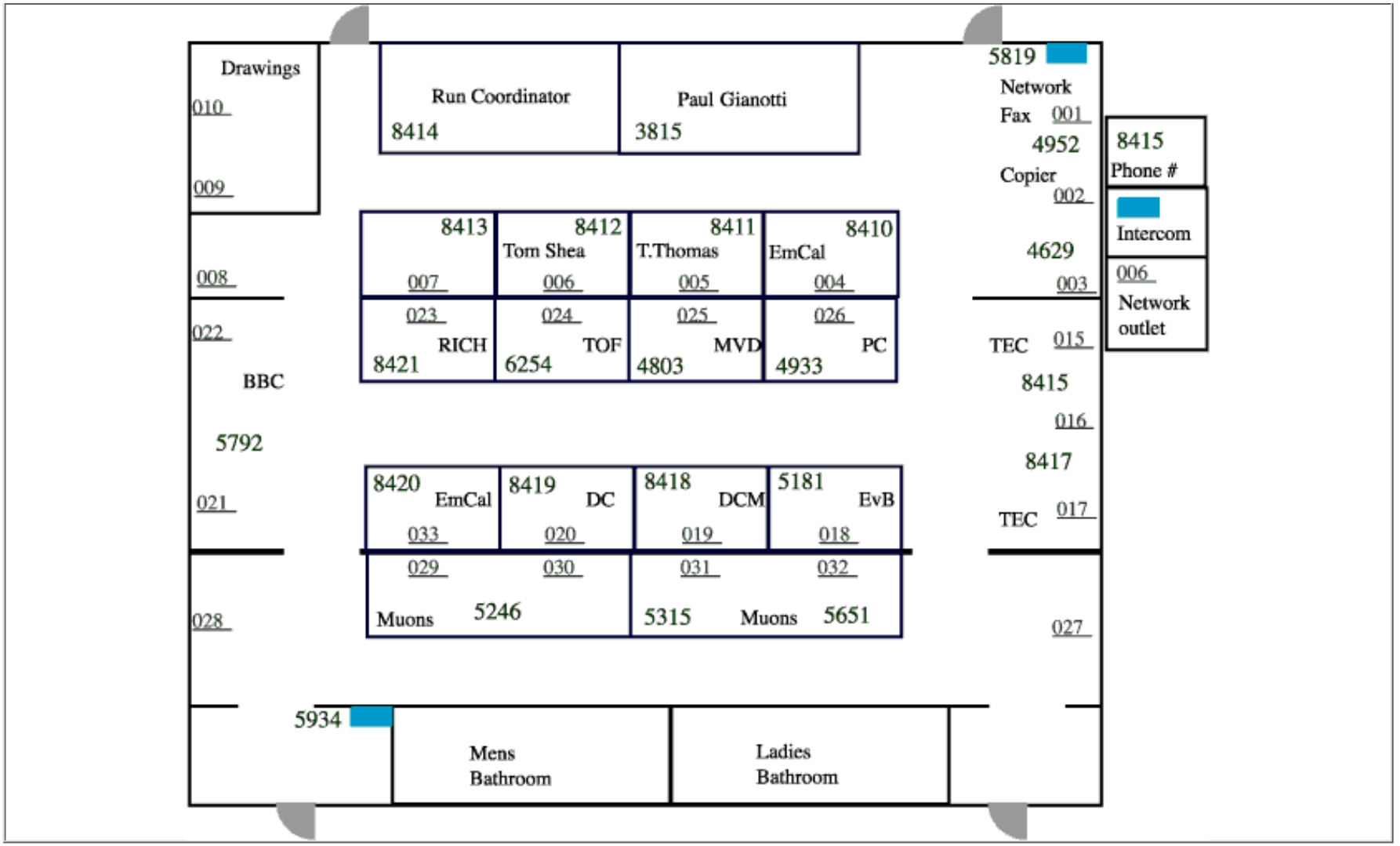
Most phones in 1008 are connected to 5 numbers: 7821, 7815, 7834, 8360, 3652, otherwise check the "Contacts" section.

The grey box called "Pager" in the drawings below is a Phenix wide intercom system which includes the GMH, IR, AH, Trailer, ... To page somebody, press the button on the handset, once you agree on one of the 5 channels select the channel on both ends and speak without pressing the handset button.



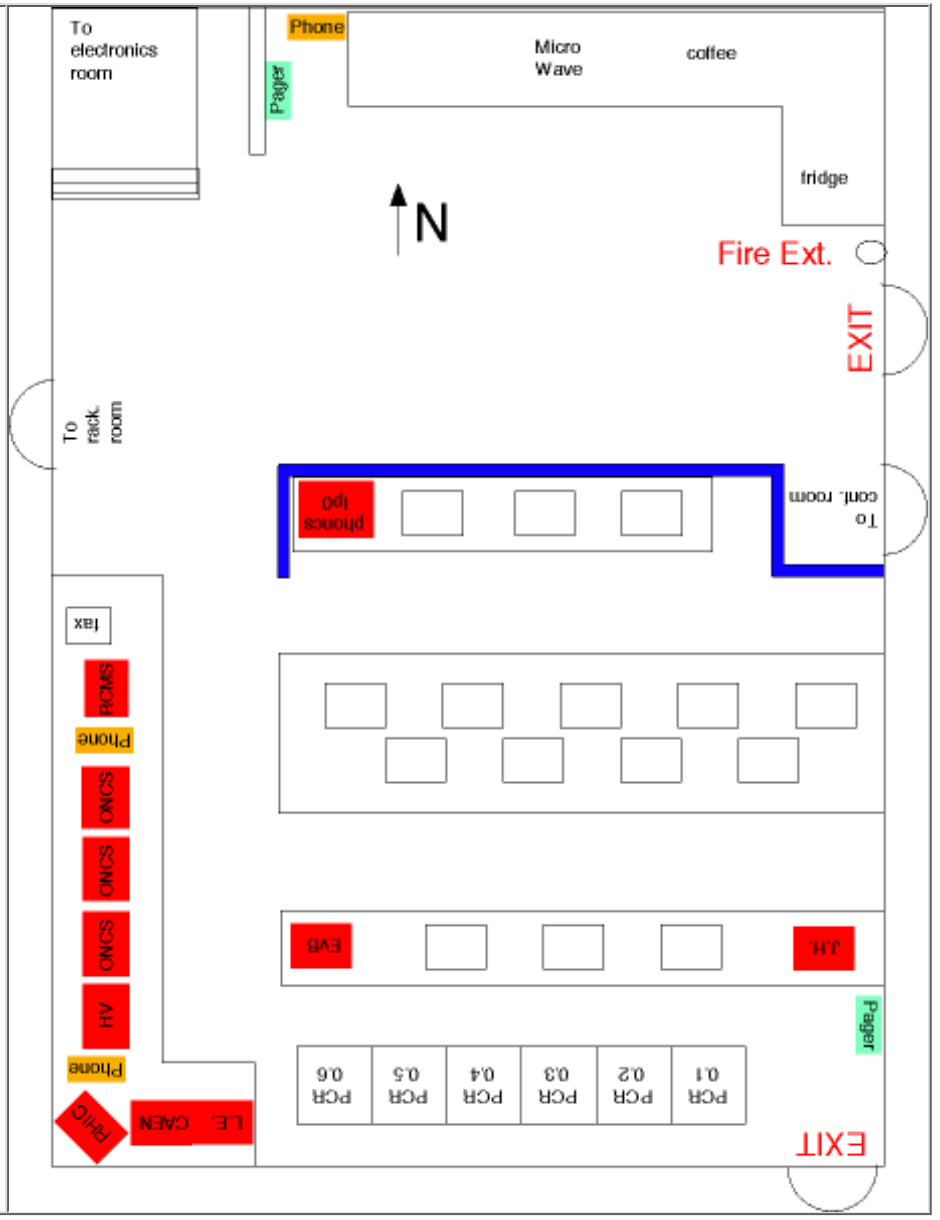
Office Trailer layout

Office trailer where all people that are not directly involved in data taking should do their work, please use the telephon numbers listed in the picture and not 7821 or 7815.

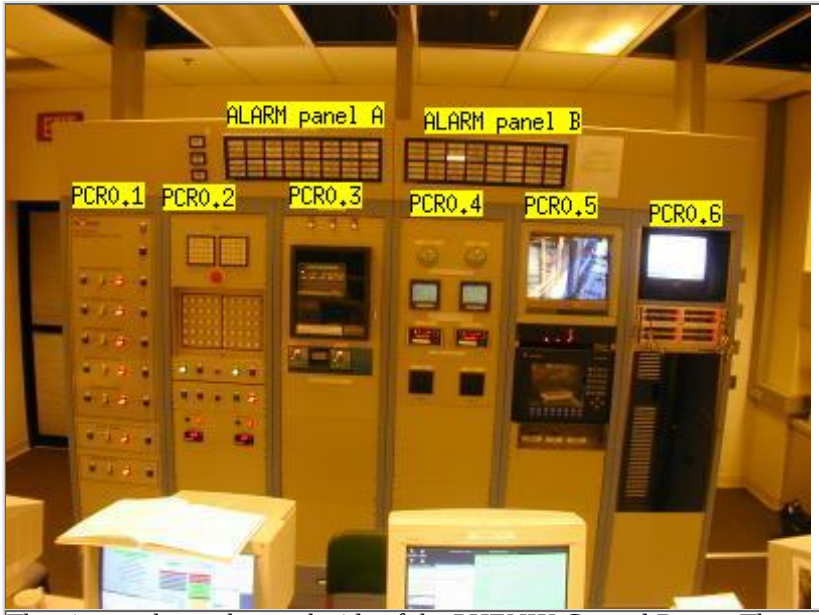


Counting-room layout

- South wall: SMCS system, smoke and breaker alarms
- West-South corner: A big plasma display is hanging from the roof. RHIC monitor termial, CANE HV PC.
- West wall: HV control terminal, termial PCs for SL and DAQ control. PC for RCMS.
- Center Bullpen: subsystems sit here
- East wall: conference room.
- North area: currently junk, coffee, needs a plan for evolution.

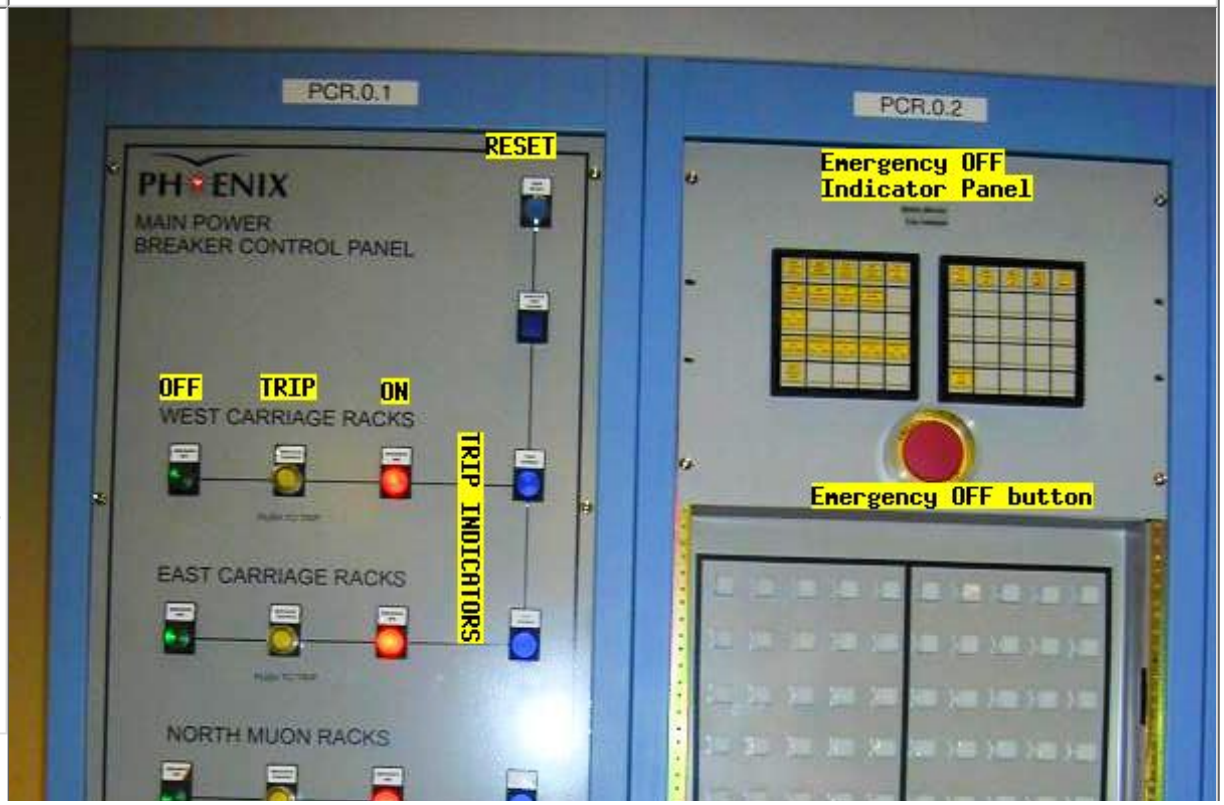


PHENIX Control ROOM (PCR) South Side



The picture shows the south side of the PHENIX Control Room. There are 6 racks of control/alarm panels. A more detailed explanation of each of the racks are given below.

Rack label	What's in there
PCR 0.1	**Main PHENIX Breaker Control Panel.** This panel shows that status of the main breakers in PHENIX. During the run, all breakers should be ON (= RED) In case of an emergency these breakers are automatically tripped, indicated by a blinking yellow light. Don't reset any breaker until the cause is found.



Emergency button and indicator panel, Vent- HVAC- and TOF fan controls.

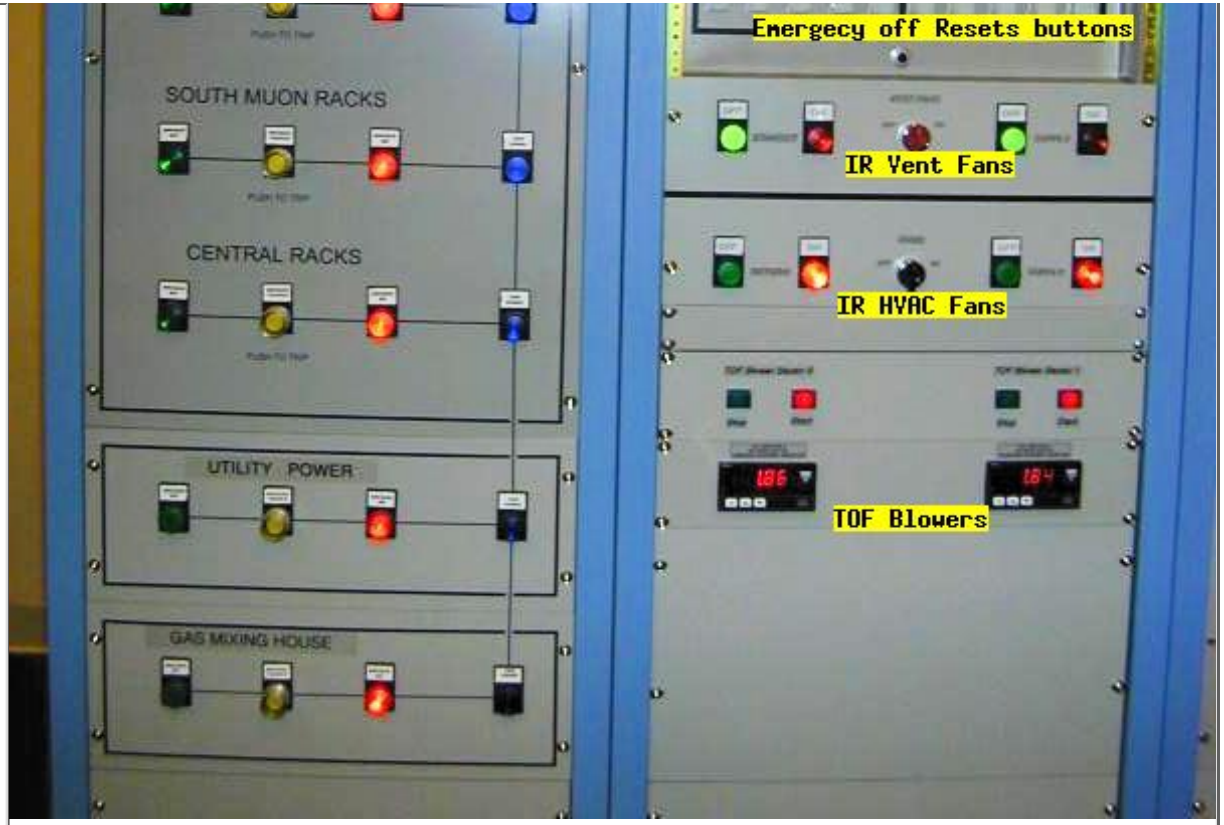
PCR 0.2

In case of emergency (fire, for example) push the big red crash button ("Emergency OFF") at the top panel.

In normal running

- IR Vent Fans: OFF (= GREEN)
- HVAC: ON (= RED)
- TOF Blowers: ON (= RED)

The "IR-vent fans" are used in case of smoke of flammable gas alarms inside the IR and are activated automatically.



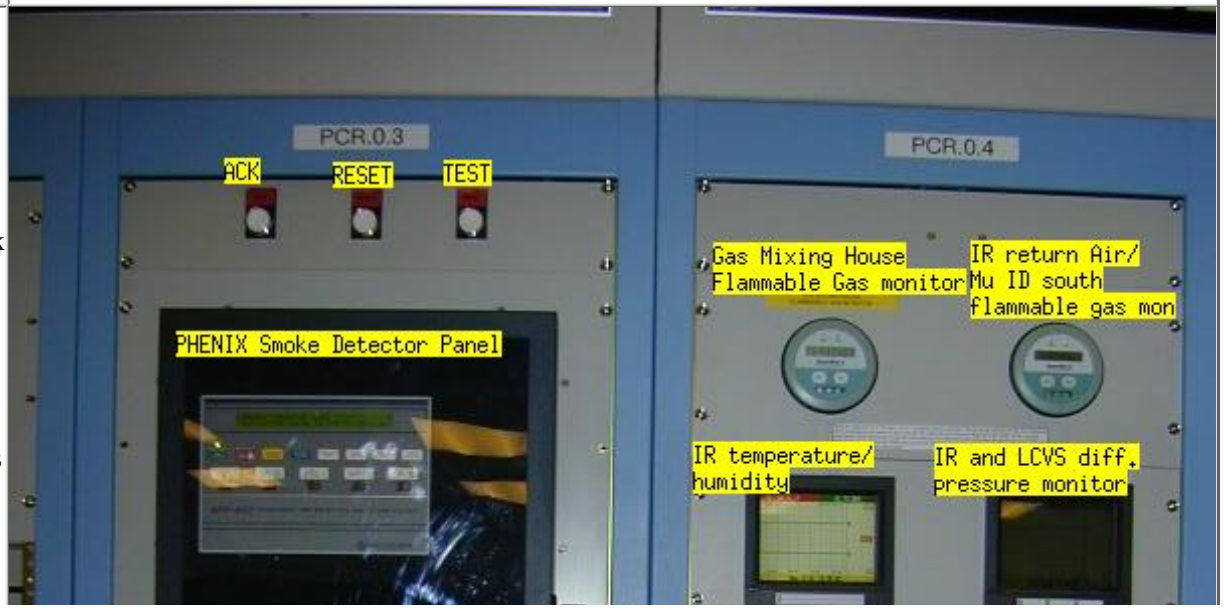
(The picture was taken on 5/12/2001)

Main Fire Panel EC and WC smoke detection

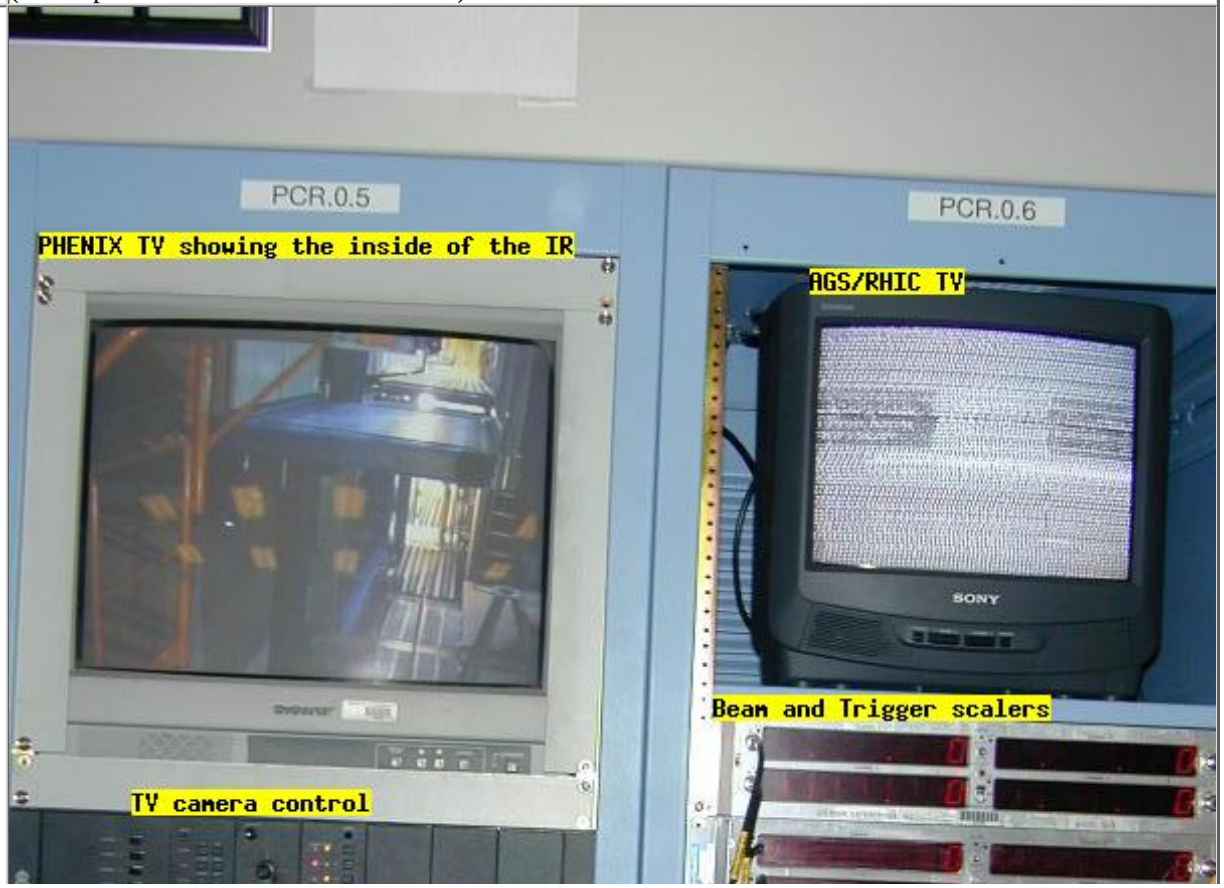
PCR 0.3

The three bottoms at the top of the rack are ACK/RESET/TEST buttons of the SMCS alarm panel. When an alarm goes off, push ACK buttom to silence the alarm. Read Alarm section how to respond to an alarm.

Below the ACK/RESET/TEST swithes are main PHENIX smoke detection panel. In normal mode, the LCD panel should display "PHENIX Racks/TOF/EMCAL (1.5)"



	"ALL SYSTEMS NORMAL (time) "
PCR 0.4	**Flammable Gas Alarms** At the top of the rack are two flammable gas monitors. In the next level, there are temperature/humidity monitor in the IR (left) and the pressure montior (right). In the next level, there are two flammable gas monitors for the central arms. Each of them have 8 active channels, which are automatically scanned by the montior. The current channel and its reading are indicated in " CHANNEL " and " READING " display of the monitor. See the bottom picture. The picture shows that current channel is 4 and its reading is -1% of LFL (Low Flammability Limit(?)) When a flammable gas alarm goes off, the channel that caused the alarm, and the level of the alarm are indicated in the bottom of the channel. There are 8 rows of "DWnM" (n=1,8). The number indicates the channel that caused the alarm. The meaning of D,W,M are: ● D = "Danger" (15% of LFL) ● W = "Warning"(5% of LFL) ● M = "Malfunction" When an alarm goes off, push ACK button of the monitor to silence the alarm, and record which channel caused the alarm in the log book. If it is due to "M", it automatically reset when the channel is scanned again. At the bottom of the panel, there are two printers that prints out the log of the gas alarm. The print out are kept by

	Paul Gianotti. Don't remove the print-out.	 (These picture were taken on 5/12/2001)
PCR 0.5	**PHENIX TV, RHIC Alarm display, and Magnet key swiches** The TV monitor at the top of the rack shows inside of the IR. The cameras are selected and controled by the control panel just below the TV. Currently, only one camera (#2) is alive. The camera is selected by the switches to the right, and the camera direction is controled by the joystick. Below the camera control is a PLC monitor. It displays the safety status of the entrie RHIC. At the bottom of the rack are three key	

	switches of the three PHENIX magnets. The keys of those magnet keys are in the lockout box at the side of the PCR0.6 rack.	 (This picture was taken on 5/12/2001)
PCR 0.6	**AGS/RHIC TV and visual scalers** The TV is for the closed circuit TV from RHIC/AGS, and it displays the status of the accelerator. The visual scalers are to be used to display the trigger counts. They are not connected as of 5/12/2001.	
Side of PCR 0.6	The picture on the right shows the side of PCR0.6 rack. The lockgout box contains the enable keys of the three PHENIX magnets (North Muon, South Muon, and Central Magnet). Those keys are used for the enable key swiches at the bottom of PCR 0.5 rack. Run Coordinator has the key of the lockout box.	

Rack Room layout

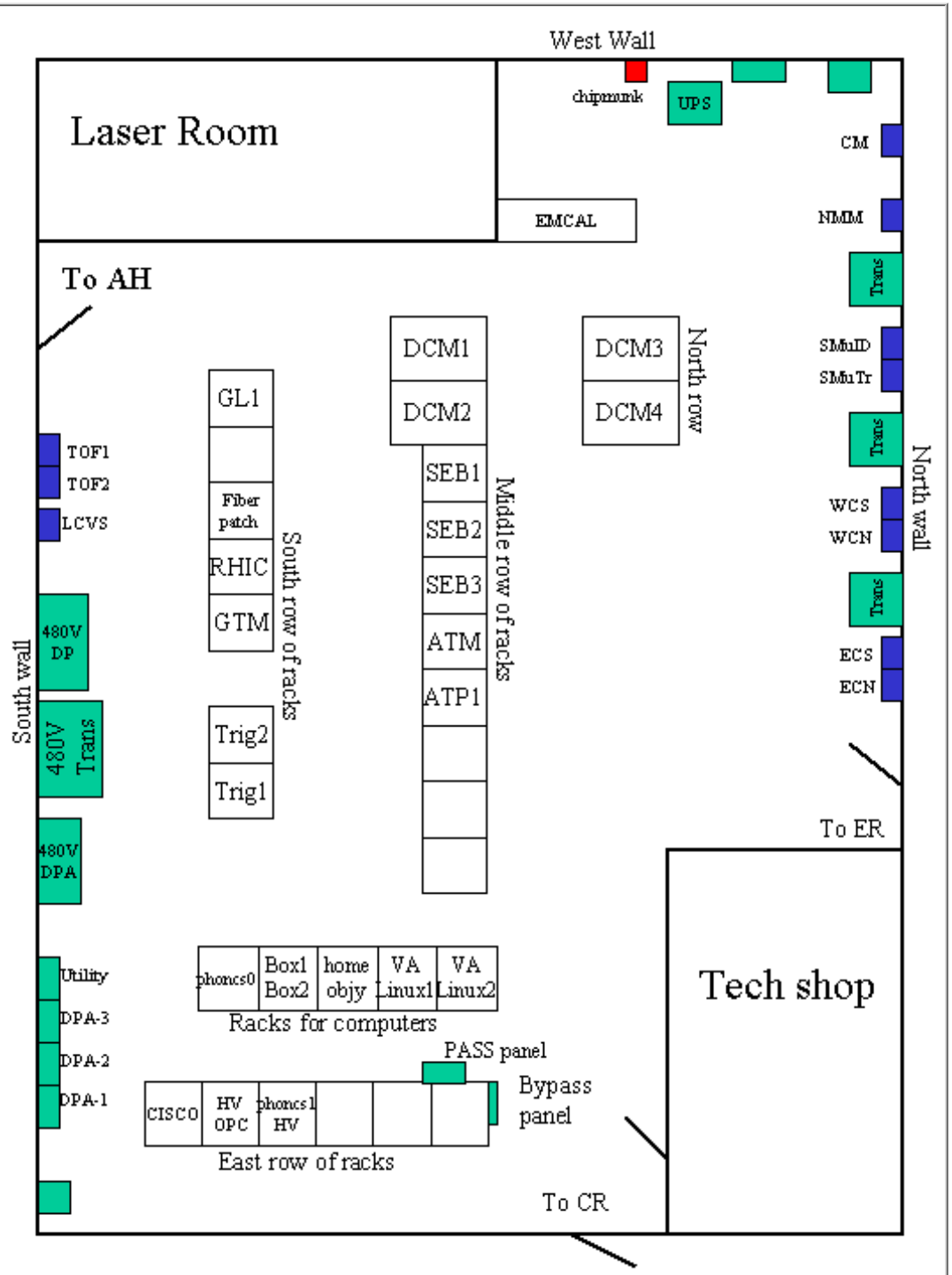
Rack Room Layout Overview

The drawing in the left is a schematic layout of the PHENIX Rack Room as of 5/12/2001. It was drawn "by hand" using PowerPoint. You should be aware of that it does not scale exactly.

Around the wall, there are many power distribution panels, transformers, power breaker panels, and power disconnect switches.

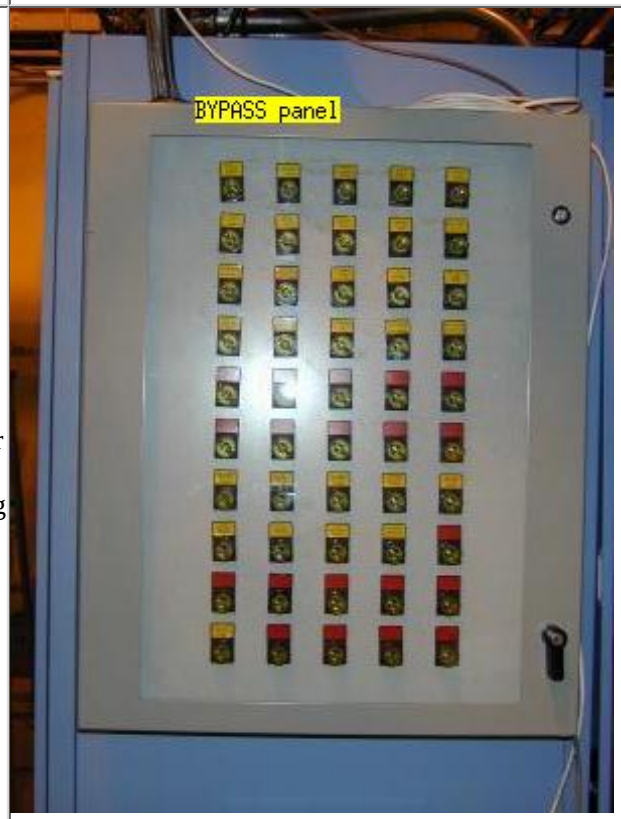
- BLUE BOXes are power disconnect swiches to the IR.
- GREEN BOXes are power breaker panels and transformers.
- RED BOX at the East Wall is a *CHIPMUNK* radiation monitor. You should be aware of the location of this device as a part of PHENIX Awareness training.

The boxes in the room represents electronics racks. Most of them has official numbers like (PPR.2.1), but in this drawing and also in the description below they are named by its function. For example, DCM1 means that the rack is mostly occupied by DCMs. More detailed description of the each rack are given below.

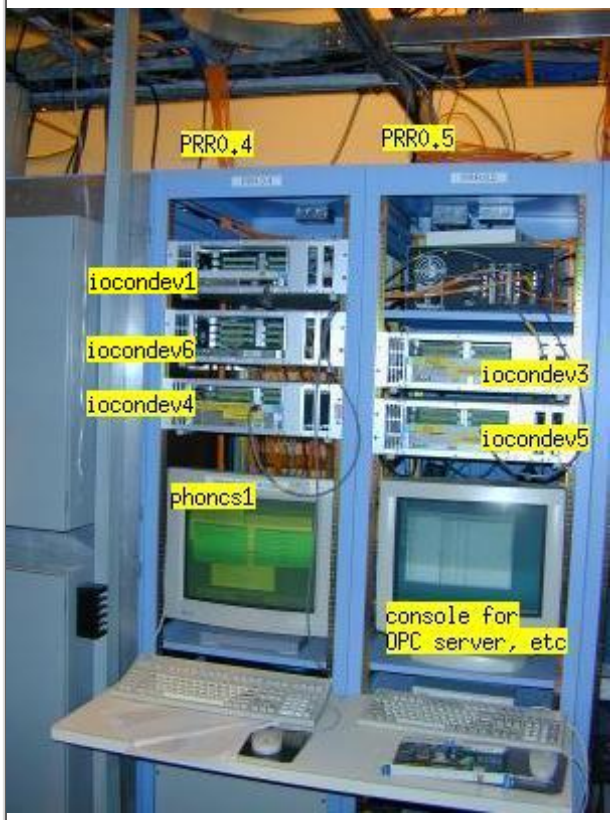


List of Racks

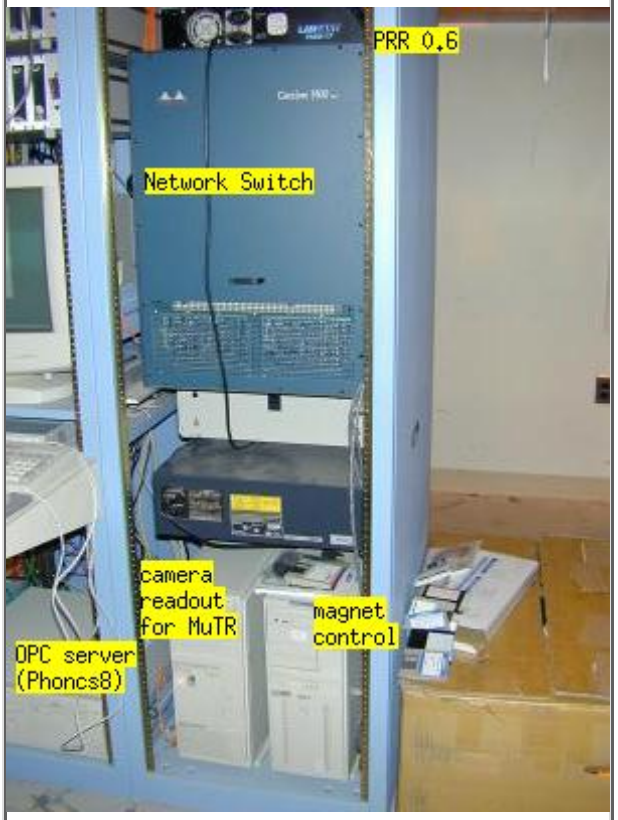
PHENIX Rack ROOM (PRR) East Row

Rack label	What's in there		
PRR 0.1 PRR 0.2 PRR 0.3	**PASS system and SMCS system** There is a BYPASS panel of the SMCS alarm system at the side of PRR0.1 rack. This is used to "bypass" the alarm (for example, disable the alarm when it is being tested or being worked on). Around the corner of the rack is a panel of PASS system. This is a teritory of CA safety and we are not allowed to touch it.	 (picture on 5/11/2001)	 (picture on 5/11/2001)
PRR 0.4	**HV IOCs, ARCNET download** This rack contains (from top) ● IOCONDEV1 and CAEN HV I/F card (HV of TOF) ● IOCONDEV6 (HV of MUID) ● IOCONDEV4 (HV of		

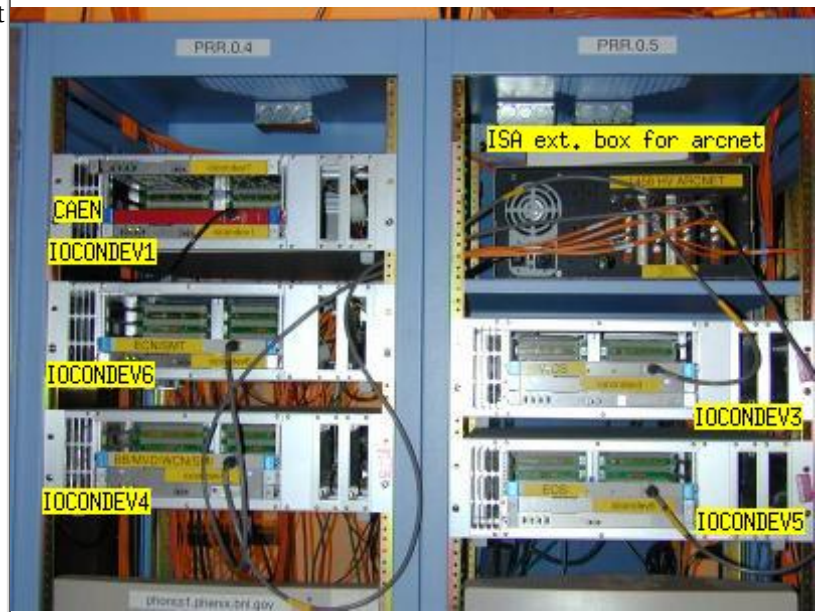
	BB/ZDC/MVD/WCN) ● PHONCS1 (Arcnet FEE download) ● ADAMs for Rack Monitor Control System (RMCS)
PRR 0.5	**HV IOCs and Console for 3 PCs** This rack contains (from top) ● A ISA extention box for ARCNET ● IOCONDEV7 (HV of SMuTr/ECN) ● IOCONDEV3 (HV of WCS) ● IOCONDEV5 (HV of ECS) ● Console for OPC server, Magnet controland Camera Readout ● OPC server PC (PHONCS8) (at the bottom. See the left picture.) The ISA box at the top of the rack is used to house ISA ARCNET converter cards (optical <--> serial). The console (monitor and keyboard) in this rack is shared by three PCs. There is a switch just below the monitor used to select one of the three PCs connected to the console. One of the PC is the OPC server, a part of Rack Monitor Control System. It read out the ADAMs of the FEE racks in the IR, and send out their status by network. These information is displayed on the screen of the RMCS PC in the PHENIX control room.

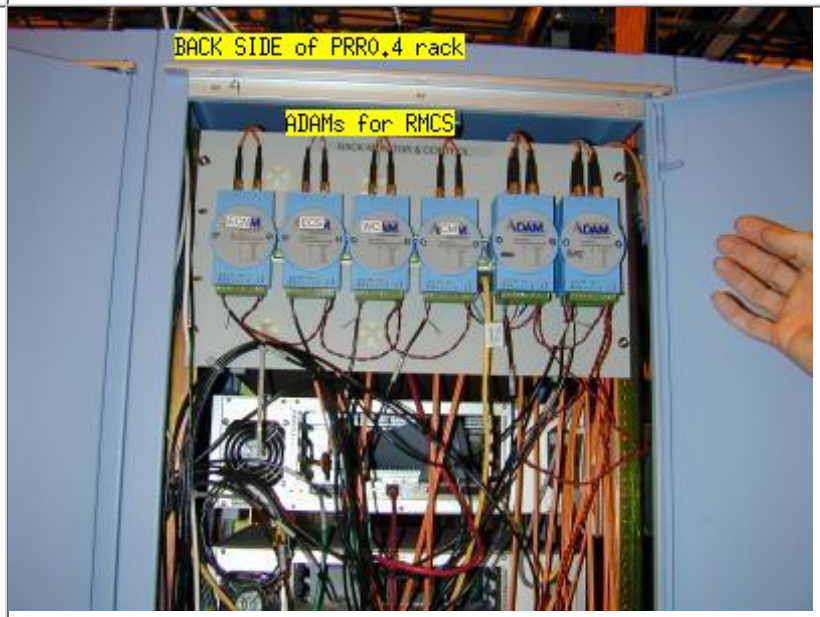


(picture on 5/11/2001. iocondev6 was added in the middle crate on 5/14/2001. IOCONDEV1 was added on 5/15/2001. IOCONDEV7 (not in the picture) was added in PRR0.5 on 5/16/2001.)



(picture on 5/11/2001.)

PRR 0.6	**Network swich** This rack contains the network switch for the entire building. At the bottom, there are two PCs. One is used for magnet control, and the other is used to read out the CCD camera for position calibration of MuTR system. Those PCs are connected to the console in PRR 0.5.		
Top part of PRR0.4 and PRR0.5	**HV IOCs and Arcnet box** In the left rack (PRR0.4), ● The top small VME crate is used to control TOF HV control. It contains CAEN HV IF card (red card) and IOCONDEV1 for EPICS. ● The second crate has IOCONDEV6 and arcnet I/F card. This is for HV control of MUID. ● The third and the bottom crate has IOCONDEV4, arcent I/F and is used for HV control of BBC/ZDC/MVD/WCN. In the right rack (PRR0.5), ● The box at the top of the rack is an ISA extension box, and it houses 4 ISA arcnet boards (fiber<-->serial). Here serial signal from IOCONDEV3,4,5,6 are converted to fiber optics. The orange lines that come out from the cards are fiber optics cables to the IR. ● The next level is a small vme crate. It contains iocondev7 and arcnet I/F. It controls the HV of MuTR		

	South EC North. (Not in the picutre.) ● The next crate contains iocondev3 and arcnet I/F. It control the HV of WC South. ● The bottom crate has iocondev5 and arcnet I/F. It control HV of ECS. In case a HV control iocondev crashes or it does not respond any more, you may need to come to here to push the reset button of the iocondev card. There are two buttons "abort" and "reset" in front of the IOC card. Push both of them.	(The picture is on 5/15/2001. On 5/16/2001, IOCONDEV7 is added in PRR0.5)
Back Side of PRR0.4	**ADAMs for RMCS** The picture on the right shows the back side of the PRR0.4 rack. At the top of the rack are data receivers for ADAMs. The monitoring data from the FEE racks are received here and is read by the OPC server (PHONCS8 at the bottom of the PRR0.5) and then displayed in the RMCS PC in the PHENIX control room.	 (picture on 5/11/2001)

Racks for Computers 

Racks for Computers

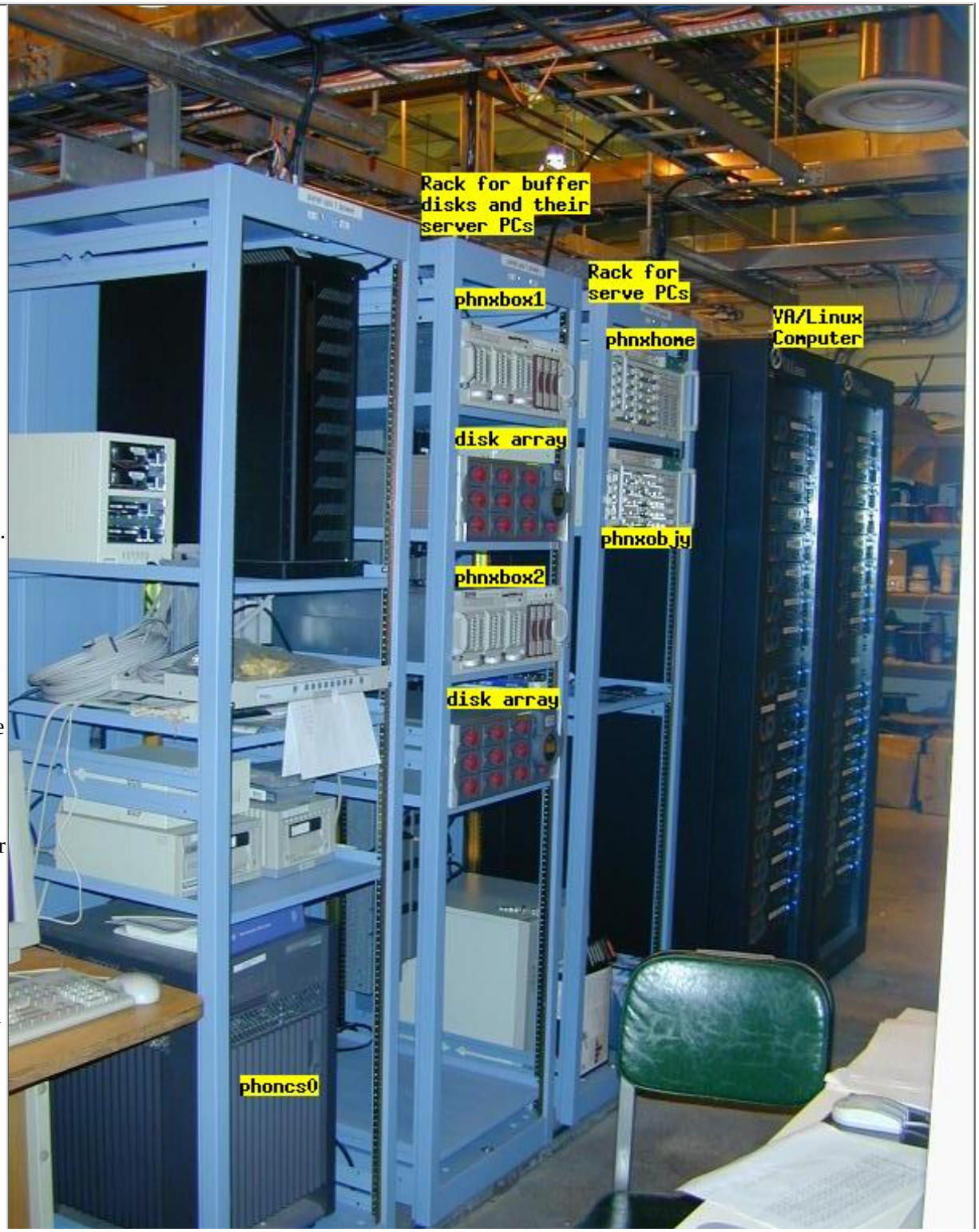
Next to the PRR0.1 - PRR0.6 row, there are 5 racks for computers. Those racks are new for RUN-2. The picture to the right shows the five racks, view from the south side.

In the south most rack has PHONCS0 computer at the bottom. This is the main online computer of PHENIX. At the top of the rack is a raid array. This was so-called "BIGDISK" in RUN-1, but now it is a relatively small scratch disk now.

The next rack contains 2 disk arrays and their server PCs. The capacity of the disk array is about 1 TB each, and they are used as buffer disks. The data is first stored in these buffer disks and then send to HPSS in RCF. Each of the two server PCs (phnxbox1 and phnxbox2) is connected to RCF via gigabit ethernet.

The middle rack contains two server PCs, phnxhome and phnxobjy. phnxhome is the server PC for user disks, and phnxobjy is the sever PC for the OBJY database.

The last two racks contains a farm of VA/linux computers. There are 32 nodes of dual CPU VA/linux computation servers (VA001 to VA032) and one node (VAMAYOR1) to control the farm.



(picture taken on 5/13/2001)

PHENIX Rack ROOM (PRR) North Row

North Row (DCM3 and DCM4)

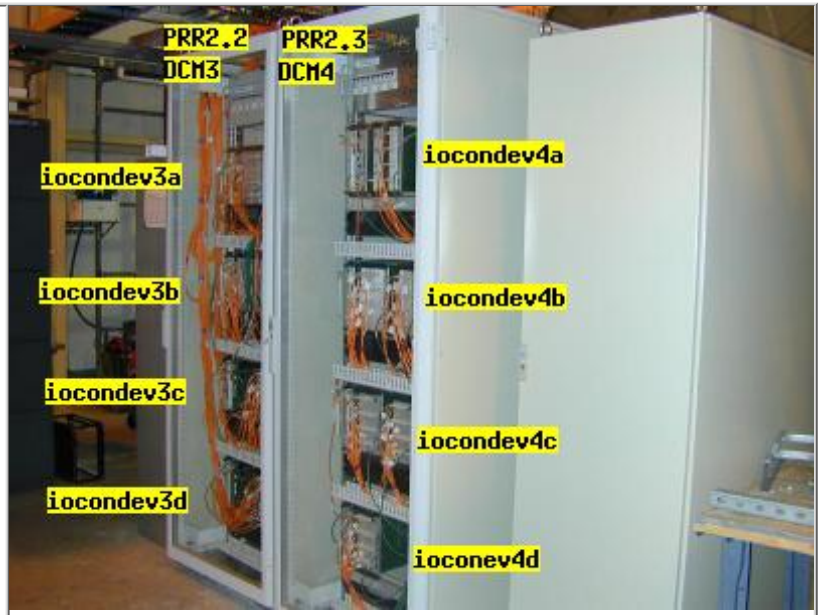
The north row of the racks at the middle of the rack room consisted of only 2 racks. They are occupied by DCMs. Each rack contains 4 DCM crates.

PRR2.2 (DCM3)

- iocondev3a: TEC.E-a + RICH.E
- iocondev3b: TEC.E-b
- iocondev3c: TEC.E-c
- iocondev3d: TEC.E.d

PRR2.3 (DCM4)

- iocondev4a: BB + ZDC + TOF.E
- iocondev4b: MVD-a + MVD-b
- iocondev4c: EMC.W.B + EMC.W.T
- iocondev4d: EMC.E.T (PBSC)



(picture taken on 5/13/2001)

Middle Row (DCM1 and DCM2)

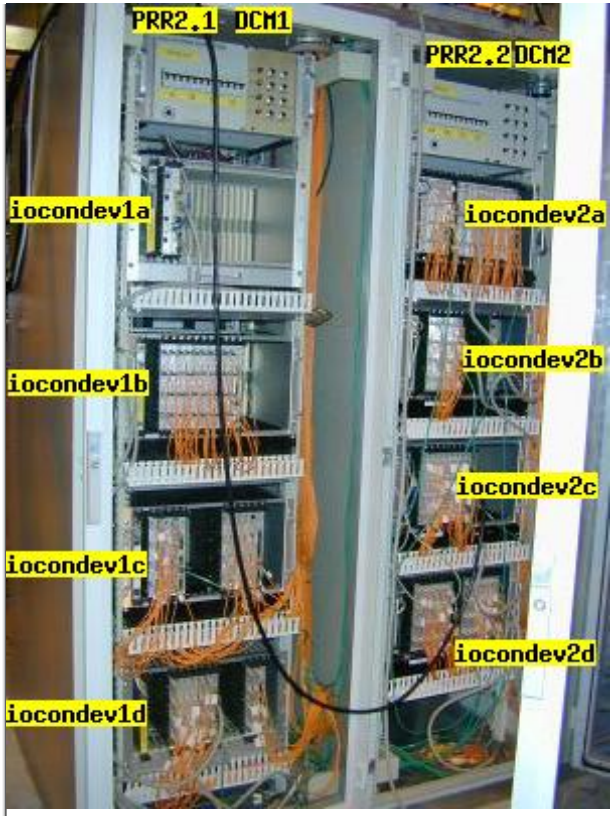
The two racks at the West end of the middle row are used by DCMs. Those racks are numbered as PRR2.1 and PRR2.2, and in this manual I call it DCM1 and DCM2. Each rack contains 4 DCM crates.

PRR2.1 (DCM1)

- iocondev1a: GL1
- iocondev1b: DC.W
- iocondev1c: EMC.E.B0 + EMC.E.B1 (PBGL)
- iocondev1d: PC.W + RICH.W

PRR2.2 (DCM2)

- iocondev2a: DC.E + PC.E
- iocondev2b: MUTR.S1 + MUID.S
- iocondev2c: MUTR.S2
- iocondev2d: MUTR.S3-a + MUTR.S.3-b



(picture taken on 5/12/2001)

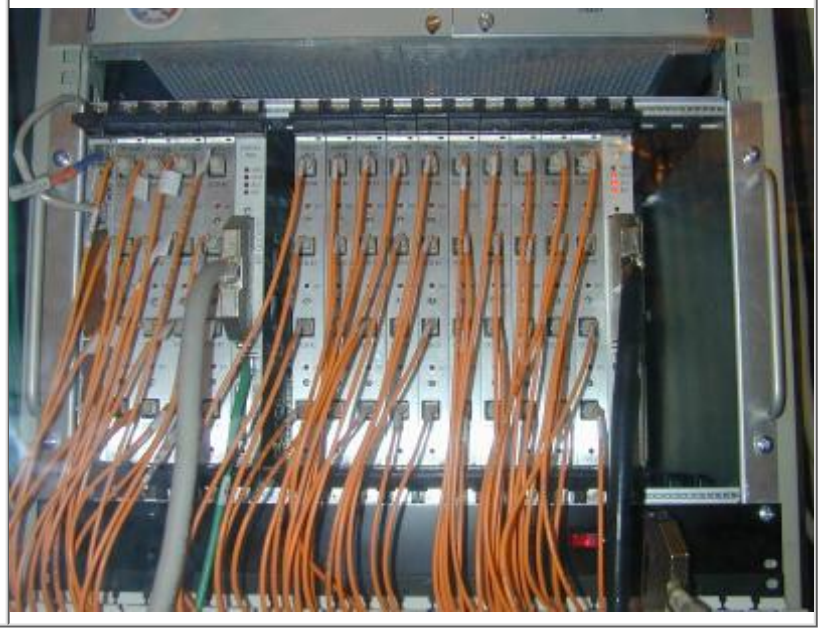
A typical DCM crate

Each DCM crates contains one controller, several DCBs and one or more "parittion" modules.

The controllers are named as "iocondevXXX". It is usually placed at the left most slot.

The boards with 4 input orange cables are DCBs. The orange cables are data optical fibers from the fiber hub in the south row of the racks. A DCB board has 4 DCMs in it, and each DCM is connected to FEE by a optical fiber. In RUN-2 configuration, one fiber is multiplexed to two FEEs for most of the subsystems. There are no more subsystem with multiplex 4.

The modules with a wide SCSI-like cable connector are "partition" modules. In the picture on the right, there are two "partition" modules in the crate. A partition module collect data in the DCBs to the left of itself, and send out the data to a SEB through the SCSI-like cable. In the picture on the right, 4 DCBs in slot # 2 to #5 are read-out by the partition module at the slot #6, and 10 DCBs (slot #8 to #17)are read-out by the partition module at slot #18.



Middle Row

The picture on the right show the middle rows racks in the Rack Room. There are 10 racks in the row, but the last 3 rows to the left are empty (as of 5/13/2001) and they are not shown in the picture.

The right most two racks are occupied by the DCMs. The picture shows the back side of the racks.

The other eight racks are basically for EVB (Event Builder). EVB is made of an ATM swich, about 30 SEBs (SEB = Sub Event Buffer) and

14 ATPs now. (The number of ATPs will soon becomes 32.) The racks are numbered as Rack 1 to Rack 8 from the right in this picture.

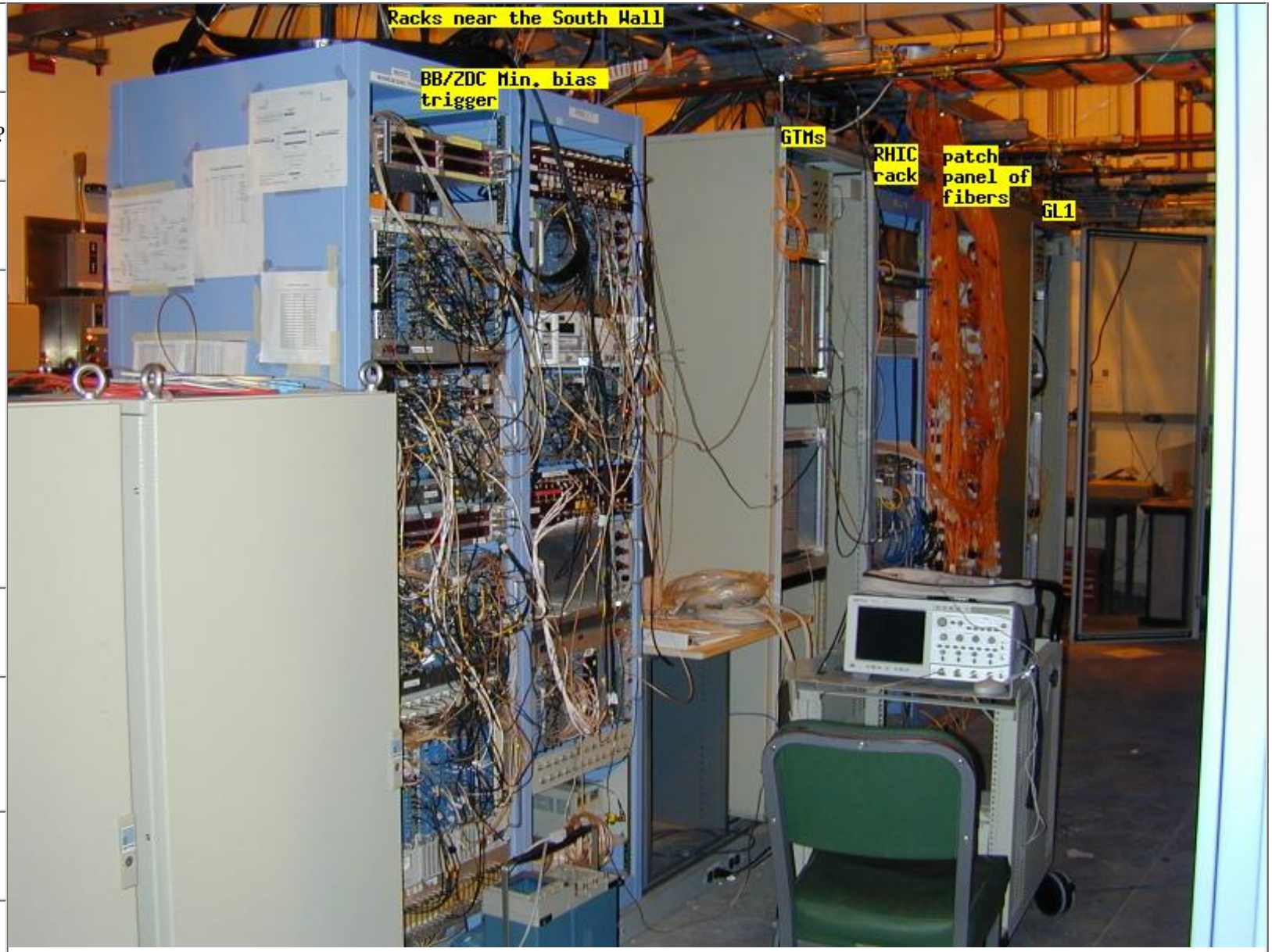
- Rack 1: GL1 data distributor at the top. SEBs at the bottom.
- Rack 2 and 3: occupied many SEBs
- Rack 4: The ATM network switch of EVB. Several ATPs at the bottom.
- Rack 5: Many ATPs.
- Rack 6-8: Not shown in the picture and they are empty now.

(picture taken on 05/13/2001)

PHENIX Rack ROOM (PRR) South Row

Rack label	What's in there

PRR 1.1	GL1
PRR 1.2	Empty?
PRR 1.3	Fiber Hub
PRR 1.4	RHIC racks. Send signal to and from RHIC
PRR 1.5	GTMs
PRR 1.6	*Not there yet*
PRR 1.7	'blue' logic
PRR 1.8	'blue' logic



(picture taken on 5/13/2001)

PRR 1.1 GL1 rack

There are three VME crates in the rack. The top one is the GL1, which generates the GLOBAL LEVEL 1 trigger of PHENIX. Input for the GL1 are generated either by so-called "blue logic" trigger (NIMs in PRR1.7 and PRR1.8) or by Local LVL1 trigger modules in this rack.

The second crate from the top is the LL1 trigger for the South Muon ID.

The bottom crate (not shown in the picture) is for the BBC LL1 trigger.

The pictures shows front side (the left picture) and the back side (the right picture) of the GL1 rack.

PRR 1.2 Data Fiber Patch Panel

This rack is the hub of the data fibers. All data fibers from and to the IR comes to this rack, and the re-directed to its final

destination.

The pictures shows front side (the left picture) and the back side (the right picture) of the patch panel. The data from and to the IR are muli-fiber cables that comes to the back side of the rack. Those fibers are neatly connected to the back side of the fiber patch panels inside of the rack. In the front side, the patch panels are converted by the orange fiber cables to DCMs, LL1s, GTMs, etc.

PRR 1.3 RHIC rack

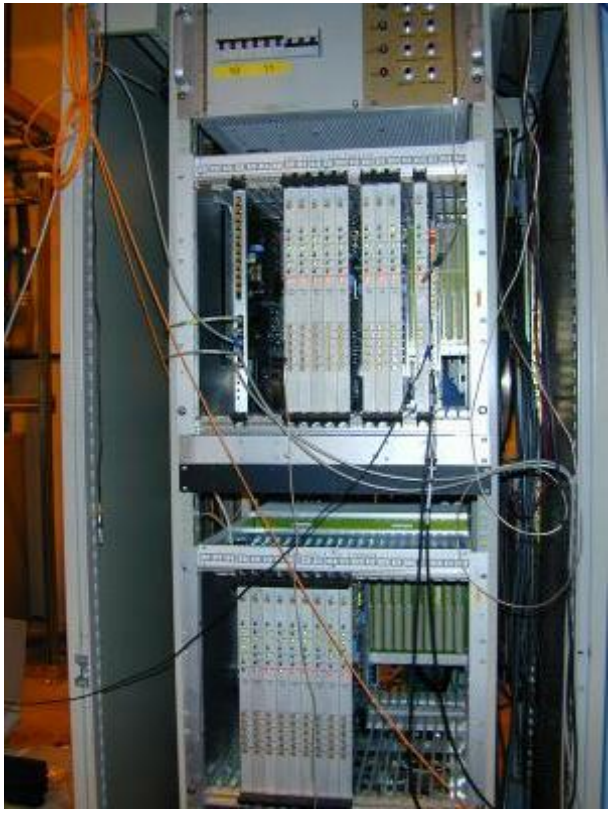
This rack is basically used to send signals from and to RHIC. For example, the RHIC clock is received here, and we send our trigger scaler signals to RHIC.

The pictures shows the front (left) and the back (right) side of the RHIC rack.

PRR 1.4 GTM rack

The pictures shows the front (left) and the

back (right) side of the GTM rack. All inputs/outputs to the GTMs are in the back side. The timing signals from the GTMs are send to the FEEs through the orange fiber cables. Those orange cables are connected to the fiber patch panels (PRR1.2). The green cables are "busy" signals from the DCMs.

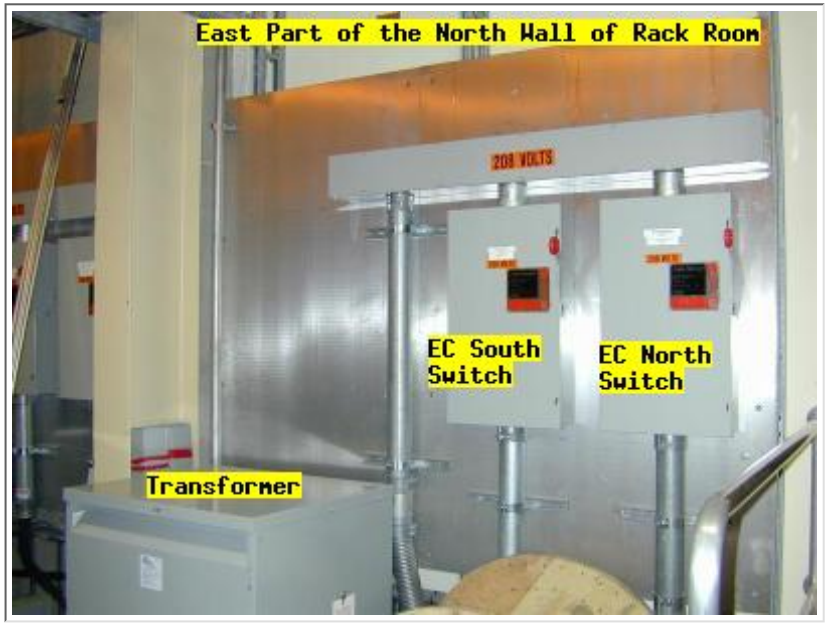


Rack Room Wall Panels

North Wall East: Power disconnect swithes of East Carriage

The swiches in the picture (EC North switch, EC South Switch) are power disconnect swiches to the power breakers in the East Carriage. There is a power breaker panel for each side (North and South) of the East Carriage, and those switches disconnect the power to the breakers. For instance, if the EC-N switch is turned off, the power to all racks in the north side of the East Carriage is cut off.

(picture taken on 05/12/2001)



North Wall Middle: Power Disconnect Swithes of West Carriage

Next to the EC switches are the power swiches for the West Carriage.

(picture taken on 05/12/2001)

North Wall West: Power Swithes of SM, NM, and CM

Those swiches are disconnect swiches to the electronics racks for South MuID, South MuTR, North Muon (MuID+MuTR), and "Central" detectors. Each switch is connected to a power breakder panel in the IR. The "Central" switch is marked as "Central Magnet", but it is nothing to do with the magnet. They supply power to the electronics racks under the central magnet, which are used by the BBCs and the MVD.

(picture taken on 05/12/2001)

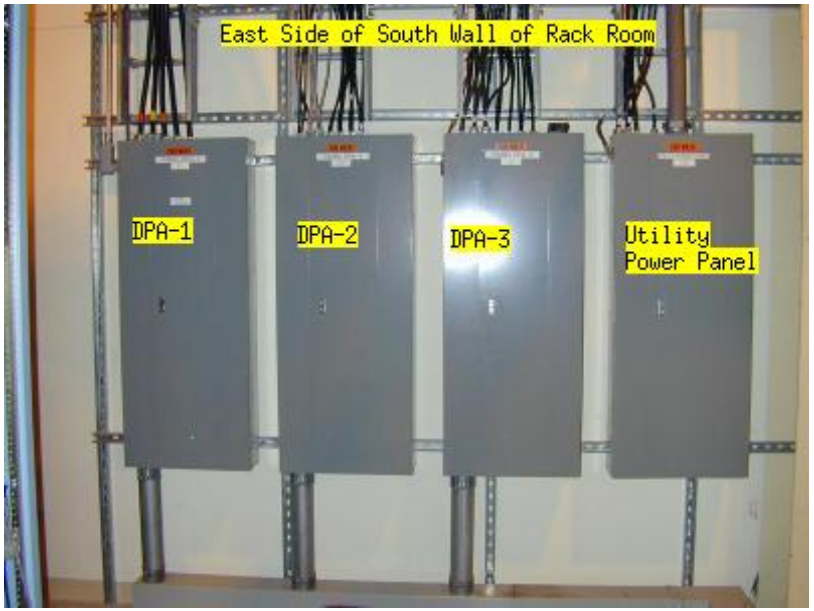
South/West wall: UPS, Chipmunk

At the middle of the West Wall, there is a *CHIPMUNK* radiation monitor. There is a large UPS below, but it is not shown in the picture.

(picture taken on 05/12/2001)

South Wall East: DPA 1-3 and Utility power breaker boxes.

(picture taken on 05/12/2001)



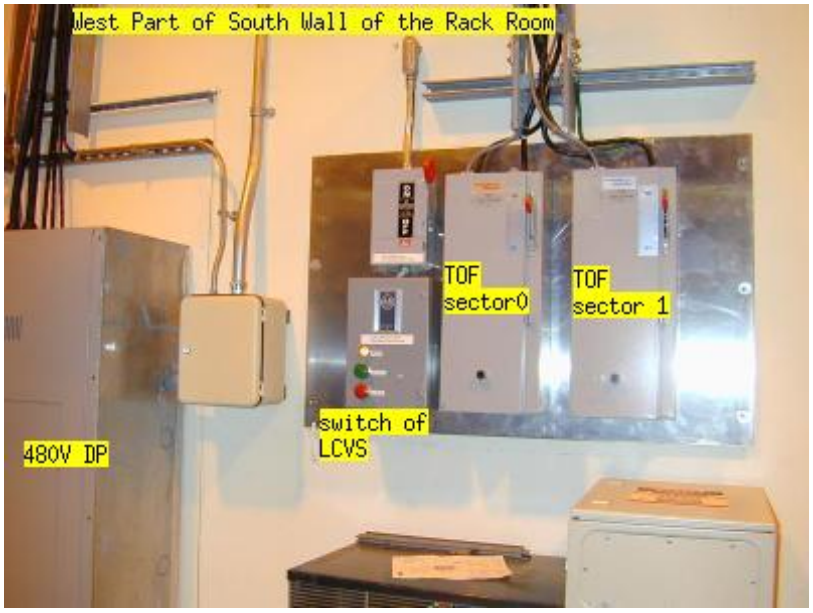
South Wall Middle: 480V DPA, transformer, DP

(picture taken on 05/12/2001)

South Wall West: Switches for TOF and LCVS

The two disconnect switches to the right are power disconnect switches for TOF blowers. (The blowers themselves are located under the EC) They are nothing to do with the TOF electronics. Next to those two swiches is a ON/OFF switch and power disconnect switch for LCVS (Low Capacity Vent Stack).

(picture taken on 05/12/2001)



Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

PHENIX Gas System

Navigation

Gas Infrastructure	Gas Storage Pad	Input Valves	Mixing Racks	Distribution valves	Computer Control	Valve Control Panel

This page should contain Manuals, Shift check-lists and lots of pictures to give people and idea where things are.

PHENIX has many subsystems, and it uses many kinds of gas for its operation.

- DC/PC uses Ar/C2H6 (Ar:50 C2H6:50)
- TEC uses P-10 (Ar 90: CH4:10)
- RICH uses CO2 as Cerenkov radiator
- MuID uses CO2/isobutane (+ N2 to inert the detector)
- MuTr uses Ar/CO2/CF4
- Compress Air is used to cool BBC and control valves of RICH.
- N2 gas is used for purge of tracking detectors.

Those gases are stored in Gas Storage Pad, and they are mixed in the Gas Mixing House, and then the mixed gases are supplied to PHENIX detector.

As a part of shift duty, the shift crew (SA2) is responsible to perform regular gas system check. The Gas System check-list, (May 17, 2001 , PDF version, 103.0 kB, May 04, 2001) is part of your shift duties.

There are three documents that cover the work by L.Kotchenda, Peter Kravtsov, and Co. who built the gas control and monitoring system:

- Gas Alarm Manual; MSWord (165.0 kB, May 03, 2001) and PDF (319.1 kB, May 03, 2001) version.
- Gas Control Software; MSWord (170.0 kB, May 03, 2001) and PDF (278.3 kB, May 03, 2001) version.
- Control DB Viewer; MSWord (151.0 kB, May 03, 2001) and PDF (227.6 kB, May 03, 2001) version.

PHENIX Gas Infrastructure

All gas bottles for PHENIX detectors are stored in the Gas Pad to the left. From the Gas Pad, the gas flows to the Gas Mixing House (GMH) (a small building in the middle), and then to the PHENIX detector in the PHENIX Experiment Hall (the dark building to the right).

This picture shows the overview of the Gas Pad as of 5/06/2001. To the left of the picture, you can see a large, white liquid CO2 storage. Under the roof, there are three rows of the gas bottles. The left and middle rows are basically back up bottles. The right rows are flammable gas bottles (isobutane, C2H6, and CH4).

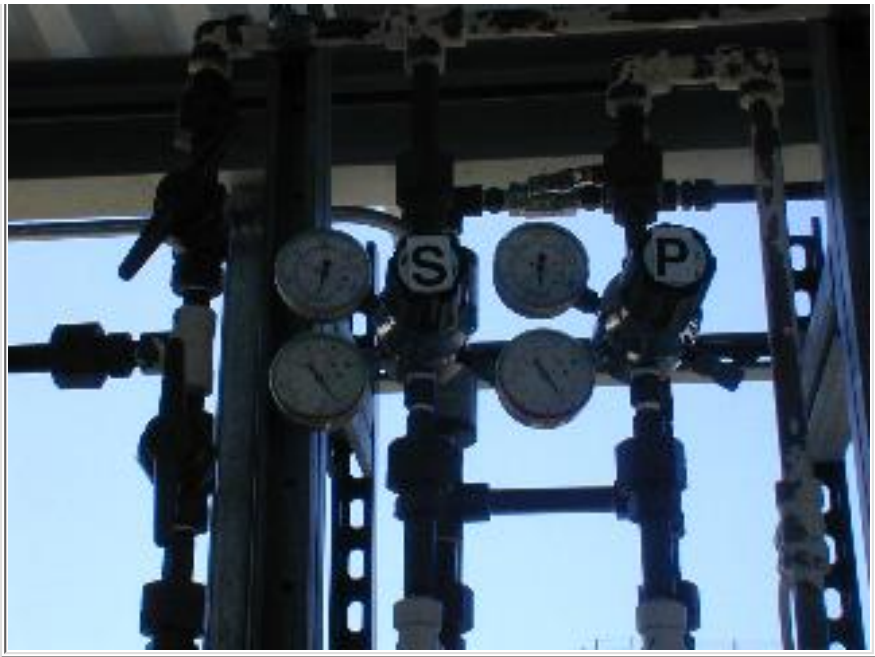
PHENIX Gas Storage Pad

Isobutane Storage on Gas Pad

Those three pictures shows the isobutane storage in the gas pad. Two isobutane bottles (primary, and secondary) are connected to the same outflow line. Each bottle is on a weight scale. As a part of the gas system check, you should record the weight of the bottles. The scale is calibrated so that zero weight means empty. If the weight is close to empty, the gas expert should be notified. The left-bottom picture shows that the bottle to the right is now in use.
All pictures taken on 05/07/2001

Ethane Storage on Gas Pad

Next to the isobutane storage is storage of ethane gas used for DC/PC tracking chambers. The picture shows only 3 "6-packs", but normally there should be 4 "6-packs" (2 for primary, 2 for secondary). The primary (P) and the secondary (S) gas bottles are connected by a rather complicated gas manifold shown above. The pressure for the secondary is set slightly below the primary bottles so that when primary bottles becomes empty, the secondary



bottles take over. The shift crew do not need to touch those gas bottles. Even when the primary gas becomes empty in the weekend, the secondary bottles have enough gas for the whole weekend and beyond. When the primary becomes empty, the gas expert should be notified.
All pictures were taken on 05/07/2001

Methane Storage on Gas Pad

Next to the ethane gas storage is storage of methane gas used for TEC tracking chambers. The arrangement is very similar to that of ethane gas bottles; the primary bottle and the secondary bottles are connected, and the secondary bottles kick-in when the primary becomes empty. When the primary becomes empty, the gas expert should be notified.
The picture was taken on 05/07/2001

CF4 bottles on Gas Pad

In the middle row under the roof, near the ethane storage in the front row, there is the storage for CF4 gas used used by Muon Tracker system. The gas system was not in use when this picture was taken on 05/07/2001

This is the only gas bottles actually in use in the middle row and last row. There are many bottles of Ar, CO2 and N2 in those two rows, but all of them are back up storage in case a fast purge is required for PHENIX.

Argon Storage on Gas Pads

The four sliver bottles in the picture are cryogenic gas bottles of argon. The gas was used by DC, PC, TEC, and Muon Tracker. Two bottles are for the primary supply, and the other two are the secondary supply. The primary and the secondary are connected, as shown above.
In addition to those four silver bottles that are connected to the outflow lines, there could be a few additonal sliver bottles in the middle row. They are back-up supplies. The pictures were taken on 05/07/2001.

N2 and CO2 storage

Beyond the Argon storage and outside of the Gas Pad are a big, white liquid N2 buggy and a huge white liquid CO2 supply.

N2 gas is used by MuID. It is also used to flush the flamable gas in the tracking chambers. In addition to this white N2 buggy, there are many bottles of compressed N2 bottles in the middle row of the gas pad. The are for back-ups in case a large quantity of N2 gas is needed for a rapid purge.

The CO2 is used by RICH and MuID system. As a part of gas system check, you should record the CO2 pressure meter shown in the right picture. There are many compressed CO2 bottles stored under the roof, but they are for back-ups in case a large quantity is needed for a rapid purge of the detectors.

All pictures were taken on 05/07/2001.

GMH, Input valves and Controls 

On the South Side wall and the West side wall of the Gas Mixing House, there are input gas lines and valves. Next to the entrance door in the South Wall are CO2 inputs (to the left of the picture above), followed by Argon, C2H6, and CH4 (at the corner of the room) on the South Wall. Near the corner of the room, on the West Wall are CF4 inputs and isobutane inputs. The following pictures shows those inputs lines in the mixing house.
(picture on 05/06/2001)

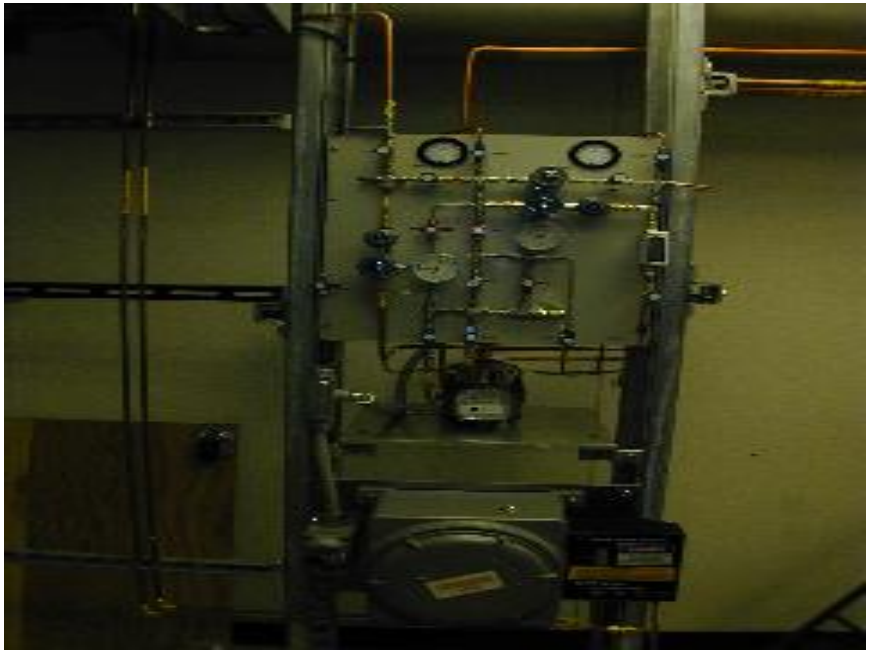
CF4 and isobutane inputs

Pictures (left to right) of the CF4 Input Valves and Isobutane input values in the GMH. (05/07/2001)

GMH, Mixing Racks

In the middle of the Gas Mixing Room are 5 gas mixing racks. They are, from the West (far from the control room), TEC rack, DC/PC rack, RICH rack, MuID rack, and MuTR rack. Those five racks are shown in the picture below. In the picture below, the TEC rack is to the left, and the MuTR track is the right most one covered by the door. (picture on 05/07/2001)

MuTR gas recirculation system



On the north corner of the east wall of the mixing room, there is a MuTR gas recirculation system, shown in the left picture. (picture on 05/07/2001)

GMH, Distribution valves

The picture shows compressed air distribution. Currently, the compressed air is used to cool BBC and also to control RICH valves. It is located in the east side of the north wall of the gas mixing room

(picture on 05/06/2001)

GMH, Gas Computer Controls

A picture of the DC/PC and TEC racks.

The big red lamp at the top of the racks are alarms that is directly linked to the SMCS alarm panel in the control room. ("DC/PC gas control rack trouble" and "TEC gas control rack trouble", respectively.) The LED indicators at the middle of the rack, just above the PC monitor, shows the cause of the alarm.

The PC in the rack records the readings of the flow meters and sensors regularly. All those readings are also shown in the PC screen. As a part of the gas system check, those reading on the screen should be recorded in the check sheet.

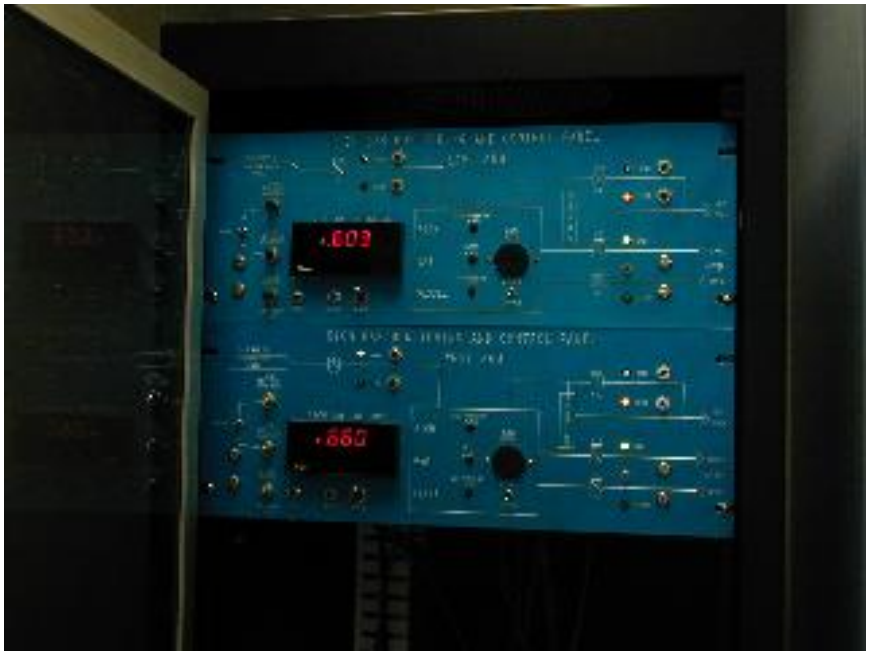
This gas control system and software is documented in the three documents, "Gas Alarm Manual","Gas Control Software", and "Control DB Viewer". The link to those files are at the top of this page.

(Picture on 05/06/2001)

The picture in the left

shows three gas controll panels near the south wall of the gas control room. They are, from the left, RICH gas controll rack (with a closed dark glass door), MuTR gas control rack in the middle, and MuID gas control rack to the right.
(Picture on 05/07/2001.)

The left picture below is the RICH controller in the rack. It was hidden by the dark glass door in the picture above. The right picture below is an enlarged view of the muID controller. As a part of the regular gas system check, the numbers in the panel should be recorded. (pictures on 05/07/2001)



GMH, Gas Valve Controls

The left picture is the crash button (red, big button) in the gas control room. In case of emergency (fire in the gas mixing room, for example), push the crash button. Then, all power in the gas mixing room is shut down. Then, the flammable gas valve is closed, and inert gas valves stays open. This should happen automatically, and in all probably situation, there is ever need to push the crash button.

The rack of the crash botton is also the rack of the gas valve panel, shown in the right picture. This panel shows the status of the gas input valves. The three red buttons indicate the flow of flammable gas (from left to right, methane, isobutane, and ethane.) The red lamp is ON when the gas is flowing. In this picture, methane and ethane are flowing, but no flow of isobutane. The three sets of button below are OPEN/CLOSE switch of the input valves. When the valve is OPEN, the middle light of the switch is ON. Below the three buttons, there are

four buttons. They are OPEN/CLOSE switches of the input valves of non-flammable gases used in PHENIX.

In case gas alarm went off at high level, all flammable gas will be shut off, but all non-flammable gas will be kept. In this case, all three red lamp at the top of the panel should be OFF, the three flammable gas valve bottoms should be OFF (no light), and the four non-flammable gas valve buttoms should be OPEN (lights are ON).

The indicator panels at the bottom of the picture shows the status of gas supply in the gas pad. If the primary supply becomes empty, the panel light is turned ON. Gas expert should be notified when any panel of the indicator turns on. However, this is not an emergency, since the secondary gas supply should automatically take over, and it should be able to supply gas for at least few days.

(pictures on 05/07/2001)

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

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High Voltage

PHONCS5

In the PHENIX Control Room, a Sun SparcStation, phoncs5, is dedicated as the console of the HV control of PHENIX. It is located in the Southwest corner of the Control Room. During the Run, SA1 is responsible for the HV of all subsystems, and he/she should use phoncs5 to monitor and control the HV.

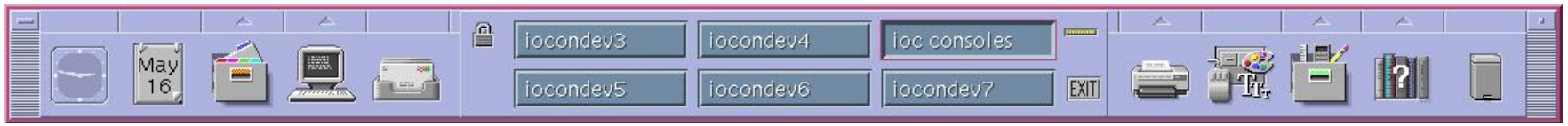
IOCs or IOCONDEVs

Phoncs5 is a console terminal for HV control, and the actual HV control is done by VME167 computers called Input Output Controllers, or IOCs for short. In the present configuraiton, 5 IOCs (iocondev3, iocondev4, iocondev5, iocondev6, and iocondev7) are used for LeCroy HV control. In addition, iocondev1 is used for TOF HV control, which uses a CAEN HV system.

The present configuration of the LeCroy HV and HV IOCs are documented in HV_ARCNET.html by John Haggerty.

Desktops for HV control

At the bottom of the screen of phoncs5, you see the OpenDesktop menu. It should be like the figure shown below.

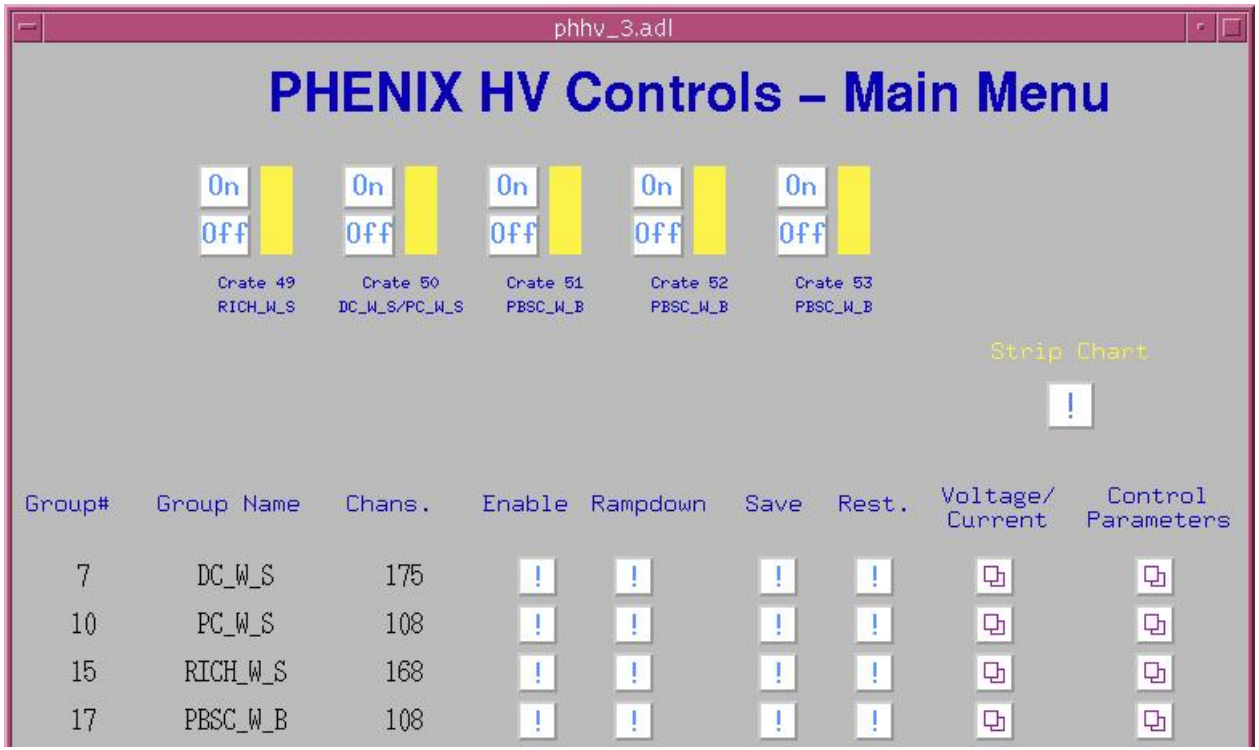


In this case, there are 6 desktops setup for the machine, named as "iocondev3","iocondev4","iocondev5","iocondev6","iocondev7", and "ioc consoles". You can click one of those boxes to select a desktop. In the figure, a desktop named "iocondev4" is selected.

The desktops "iocondevn" (n=3,4,5,6,7) are set up to control HV channels that are controlled by these iocondev HV controllers. The desktop "ioc consoles" is a screen to talk to IOCONDEVs directly.

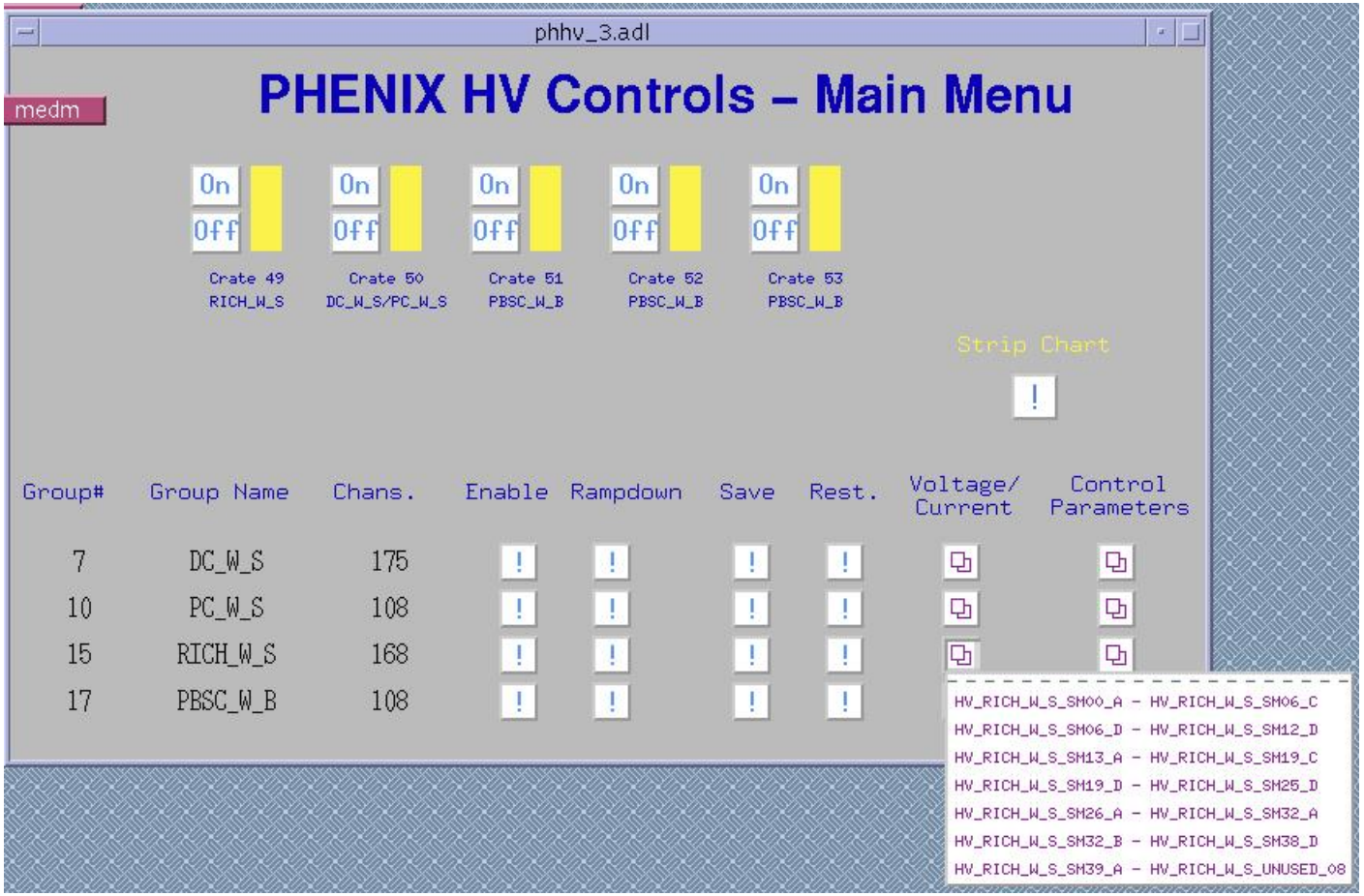
HV control GUI

If you select one of these 5 desktops, the desktop should have a main menu of the HV control GUI. It is like the figure below.



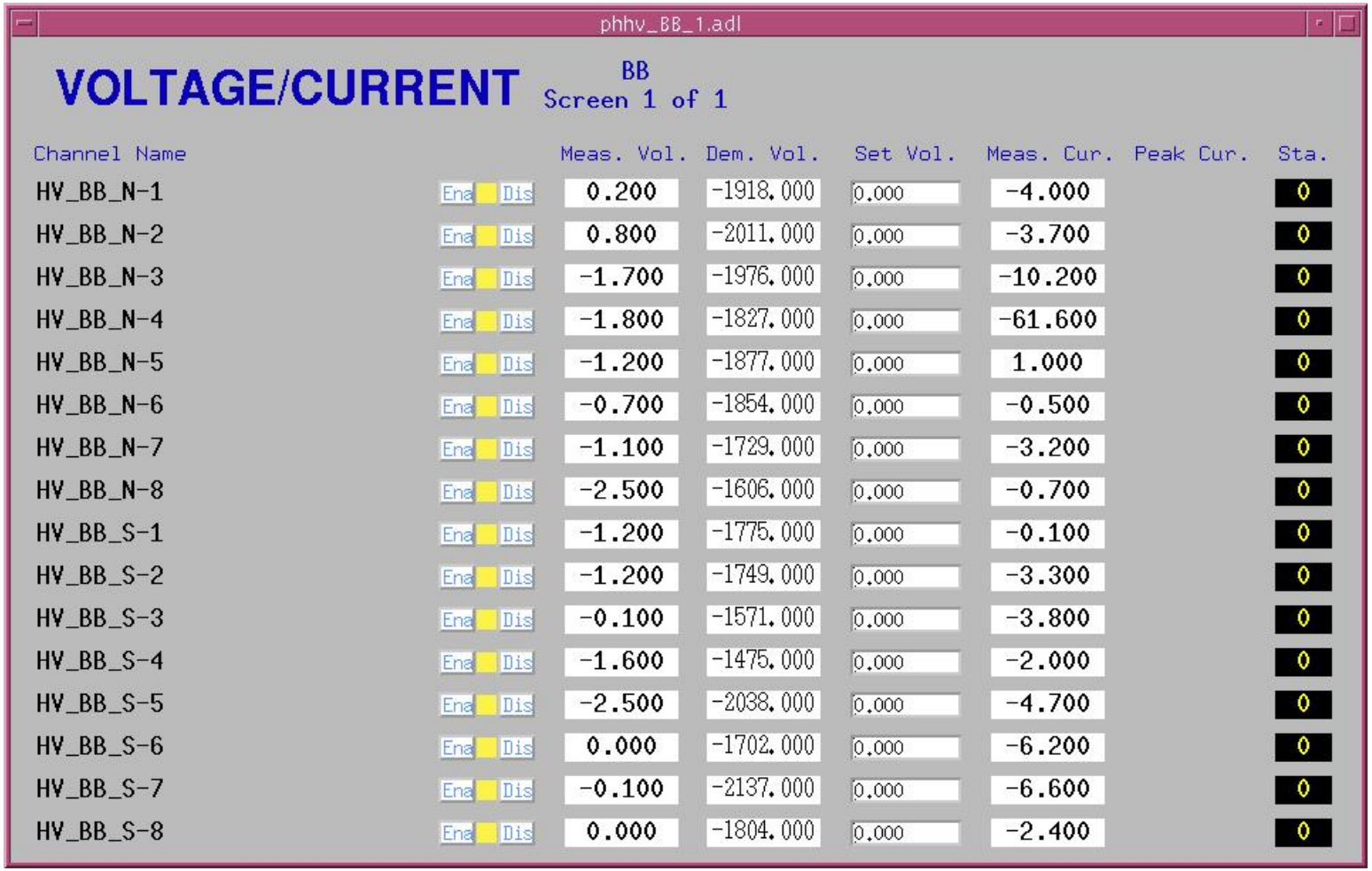
This is a main menu of the HV GUI for iocondev3. In this screen, you can trun ON/OFF LeCroy HV mainframe. In this figure, there are 5 LeCroy HV mainframes cotrolled by iocondev3 (shown at top). A pair of "ON","OFF" swithces and a colored box (yellow in the figure) corresponds to one LeCroy HV mainframe. The name of the mainframe and the subsystem served by it is indicated below the buttons. By clicking the "On" button by mouse, you can turn on the mainframe. The status of the mainframe is shown in the color of the box next to the button. It is yellow if the mainframe is OFF and green when ON.

These mainframe buttons only turn on/off the mainframe power. A HV channel is actually turned on when and only when the channel is also "enabled". Individual channels are controlled by next level of the menu screen. You can select a channel control screen from the menu. First, you move your mouse to one of the boxes in "Voltage/Current" column. For example, the mouse on the box in "RICH_W_S" row. Then, a cascade menu appears as shown below. The cascade menu indicates that there are 7 sub-menus for "RICH_W_S" (RICH detector West-South part). Move mouse on the top of one of those 7 lines, and click it. Then, the HV control page corresponds to the selected channel should appear.



In some cases, there is only one sub-menu associated with the selection box. In this case, the HV control page pop up without a cascade menu step.

The figure below shows one of the HV control page. This is a page for BBC HV control.



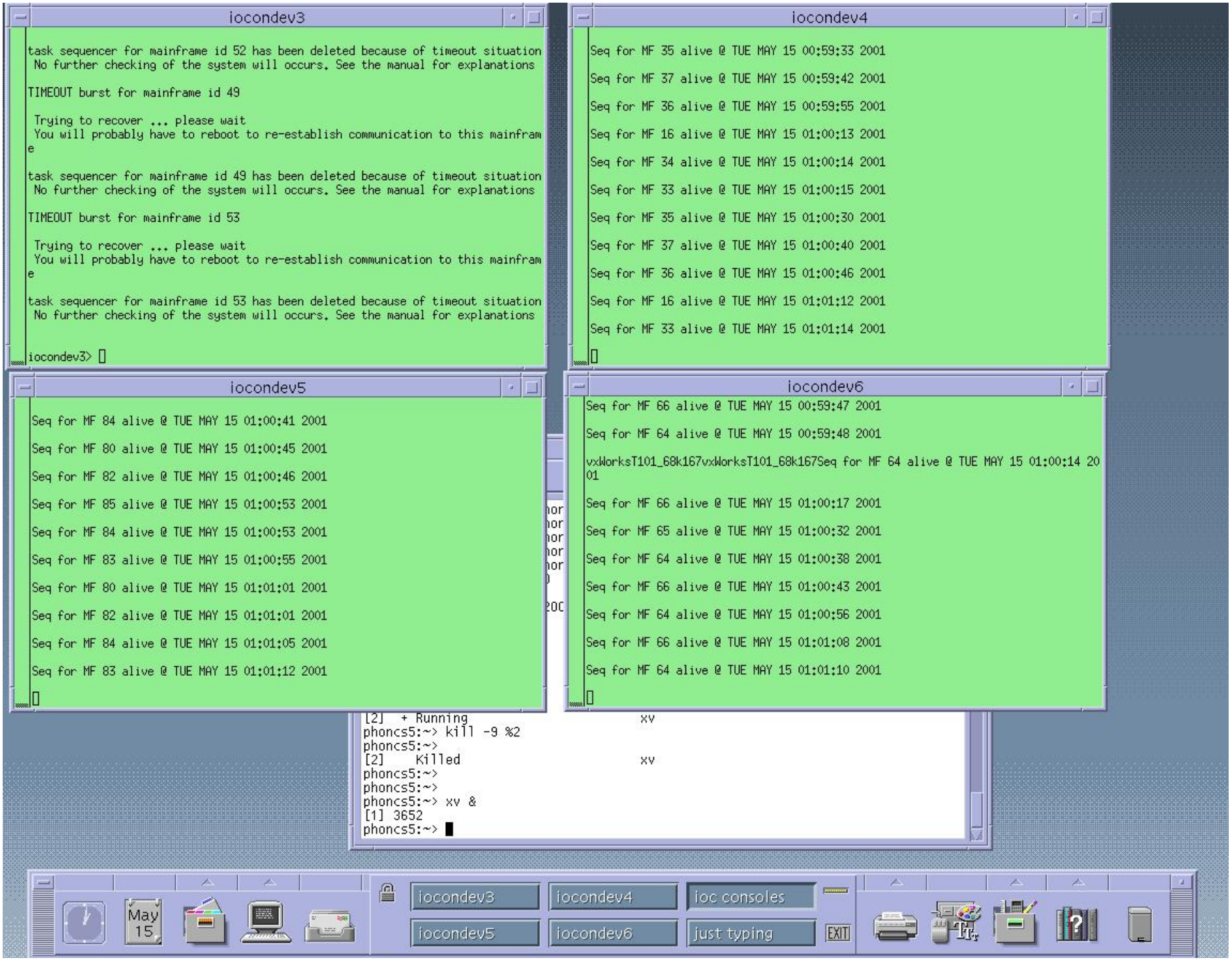
The page has Enable/ Disable swiches, measured voltage, Demanded voltage, Set voltage, and measured curent, and the status for each HV channel. If you push "Ena" button, the channel is enabled, and if you push "Dis" button, it is disabled. The colored box at the middle is yellow when it is OFF, and it becomes green when it is turned on. The status is also shown by number in the right most box.

Note that the response of the system is *VERY SLOW*. Depending on the activity, it can take ~20 seconds for a change to be instantiated.

Consoles of IOCs

In principle, you can control the HV by the GUI explained above. However, sometimes you may want to talk to the IOCs directly. For instance, the iocondev has crashed and you have to reboot it.

The desktop named as "ioc console" is set up to display serial consoles (green screen) to the HV IOCs. When you click "ioconsole" box in OPEN DESKTOP, you will see a screen link the figure below. Note that "ioc consoles" box in the OPEN DESKTOP menu is selected in the figure.



Each of those 4 green screens are "serial console" to each of 4 iocondevs. In the figure above, you see that iocondev3 is generating many Warning messages. This is not good. The message indicates that the iocondev3 failed to talk to LeCroy MainFrame #49 and #53, and this could be due to some hardware error. All other three iocondevs seems OK.

starting up HV control GUI

Usually, the five iocondev desktops should have been set up and the HV control GUI should be running there. However, sometime you need to restart the HV control GUI. You can do this as follows:

- Select the desktops. For example, iocondev3.
- Open a terminal widow. This can be done by clicking the terminal icon in the OPEN DESKTOP menu.
- Upon opening new terminal window, you should be at /home/phoncs
- phoncs5:~> source epics/scripts/setup_epics
- phoncs5:~> iocondev3

In the last step, you should use command iocondevn (n=3,4,5,6,7) that is appropriate. It starts up the HV control GUI of the corresponding iocondev.

Rebooting IOCs

Sometimes, an IOC is crashed or hang, and you need to reboot it. You can do it by

- cntr-X

in the console window of the IOC. Here cntr-X is a standard reboot key of VX-works.

After the IOC rebooted, type

- < load

from the console window if necessary. The reboot script may have done this last step. See the last line from the reboot process. The last line can be

```
#< load
```

and this means that "< load" command is commented out. In this case you need to type "< load" by yourself to complete the reboot process.

Opening the "green" console for IOCs

Usually, 5 green window consoles for the 5 IOCs should be in "IOC consoles" desktop, as described before. If you do not find them in the desktop, you need to re-open the console. For example, you do not find the console window for iocondev3, and you want to open it. This can be done as follows:

- Open a terminal window. (Click "terminal" icon in the OPEN DESKTOP Menu). You can use existing terminal window if there is one.
- phoncs5:~> ts iocondev3

The last command is for iocondev3. If you want to open the console to iocondev5, type "ts iocondev5".

Note that this "ts" command works on other computers in the control room. But there is only one console window allowed for one IOC. If you issue "ts" command to IOC which already has a console open somewhere, the existing console window is destroyed and then a new console open in your screen.

Hardware RESET of IOC

It is rare, but it is possible that you can not reboot an IOC by "cntl-X" from the console screen. In this case, you need to reset/reboot the IOC by hardware reset switch. Go to the Rack Room next to the Control Room, and find the IOCs you want, and push the reset switch. There are two switches "abort" and "reset" in front of the IOC card. Push both of them. The location of the IOCs is written in 1008 PRR East Row section of this manual.

Note: It is possible that for some reason, the IOC does not come up after the first reboot attempt. To try a second reboot, it is necessary to wait for ~2 minutes. There is a 'lock out' time after a reboot during which the IOC will not respond to an additional reboot attempt.

HV Manuals and Web Pages

For Run2000, a few documents were written for the HV controls and they were linked in Run-1 manual. Since they are written for Run 2000, some of the content can be outdated, but they are still very useful.

Lars Ewell developed the GUI and EPICS control of PHENIX HV control system. He has written a:
Users- (Postscript (9.5 MB, November 20, 2000) or PDF (347.3 kB, May 03, 2001 version))
and Operations- (Postscript (1.7 MB, July 16, 2000) or PDF (89.4 kB, May 03, 2001 version))
manual for the HV system. Those manuals are written for Run2000, and therefore some of the content is outdated, but they are still very useful.

Johann Heuser has set up a Web Page entitled "PHENIX Drift Chamber High Voltage Control" but it contains more usefull information than the title implies ;-)

TOF has a Web page and a PDF file (339.9 kB, May 03, 2001) for their HV system.

Original Run-00 version by A. Franz. Achim@BNL.GOV
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Low Voltage System

Navigation

BBC	Magnet	DC	MuID	MuTr	MVD	PbGl	PbSC	PC	RICH	TEC	TOF

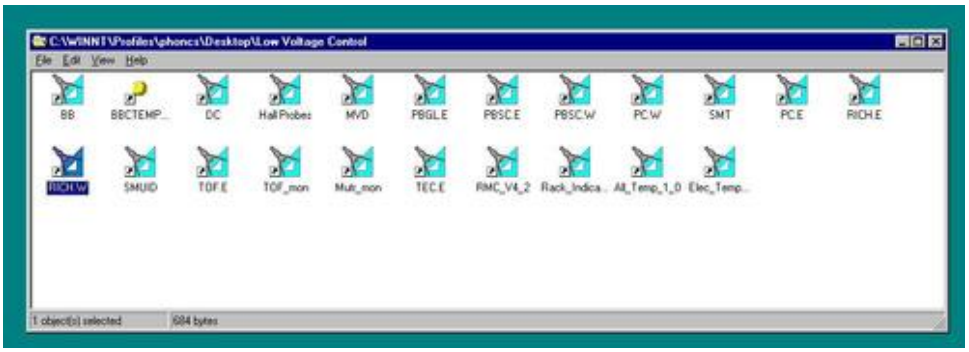
Introduction

The LV control and temperature monitor of the electronics racks in the IR is performed by the RCMS (Rack Control Montior System). A PC in the PHENIX control room is dedicated as the console of the RCMS. It is the left most PC at the West Wall of the control room, and it is clearly marked as "Rack Monitoring and Control".

Each subsystem has "monitoring pages" to control the LV and to monitor the rack. You can launch a page by clicking the icon for the page. All short-cuts for the LV control/monior icons are stored in the "Low Voltage Control" folder on the desktop of the RMCS PC.

The pictures on the right shows the icons and folders related to LV control and monitoring. The two icons are icons for the program used to design a LV monitor/control page. The folder (Low Voltage Control) contains all pages for the subsystems.

When you click the "Low Voltage Control" folder, it will open as shown in the picture on the right.



Each of the icons in the folder represents a LV control/monitor page. For instance, when you click the icon with name "BB", it will expand to a page of BBC LV control.

Usually, many of those pages has been opened, and most of them are minimized at the bottom of the desktop. Clicking those minimized icon also open the page.

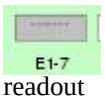
A LV channel is turned ON/OFF by a button on the page. The picture on the right shows typical buttons. When the channel is OFF, its color is white (the left figure), and when it is ON, it becomes pink as shown in the right figure. The shade of the button shows that the button is either in "pushed down" state or in "popped up" state.

OFF ON

If you place the mouse pointer on a widget (an ON/OFF indicator or a number display window) for a few second, the formula that is displayed in the widget is poped up, as shown in the figure on the right. In the case shown in the right, the mouse pointer was placed at the left most window ("37.31"). The formula poped up indicated that this window display the value from an ADAM channel "WCN13-1.Slot4_AI_05", and for display purpose it is multiplied by 10.0. The bottom line shows the alarm condition. In this case, if the value of the channel becomes >5.0 (or 50.0 when multiplied by 10.0) the alarm goes off.

If alarm condition is satisfied, the window becomes RED and it starts blinking, as shown in the third window (30.07) from the left of the figure.

When a channel in the page (either an indicator lamp or an ON/OFF switch or a window to display value) can not be read out, its color becomes *GRAY*, as shown in the right figure. Usually it is just a temporary problem, and it should become a normal state in a minute or so. If it stays to be GRAY for a while, something is wrong. It can be a hardware problem of the ADAM channel.



readout problem

If you want to edit the GUI, you can do it by "configure" menu in the menu bar. When "configure" menu is clicked, the program goes into a GUI editor mode. You can then edit the GUI. When you are done, you can go back to the running mode by "runtime" menu in the menu bar.

The color of indicators and ON/OFF button has the following meaning.

- **When a LV channel is OFF, its indicator is GREEN**
- **IF a LV channel is ON, its indicaotr is RED.**
- **IF a LV channel is ON, its ON/OFF switch is PINK**
- **ALARM is RED and blinking.**

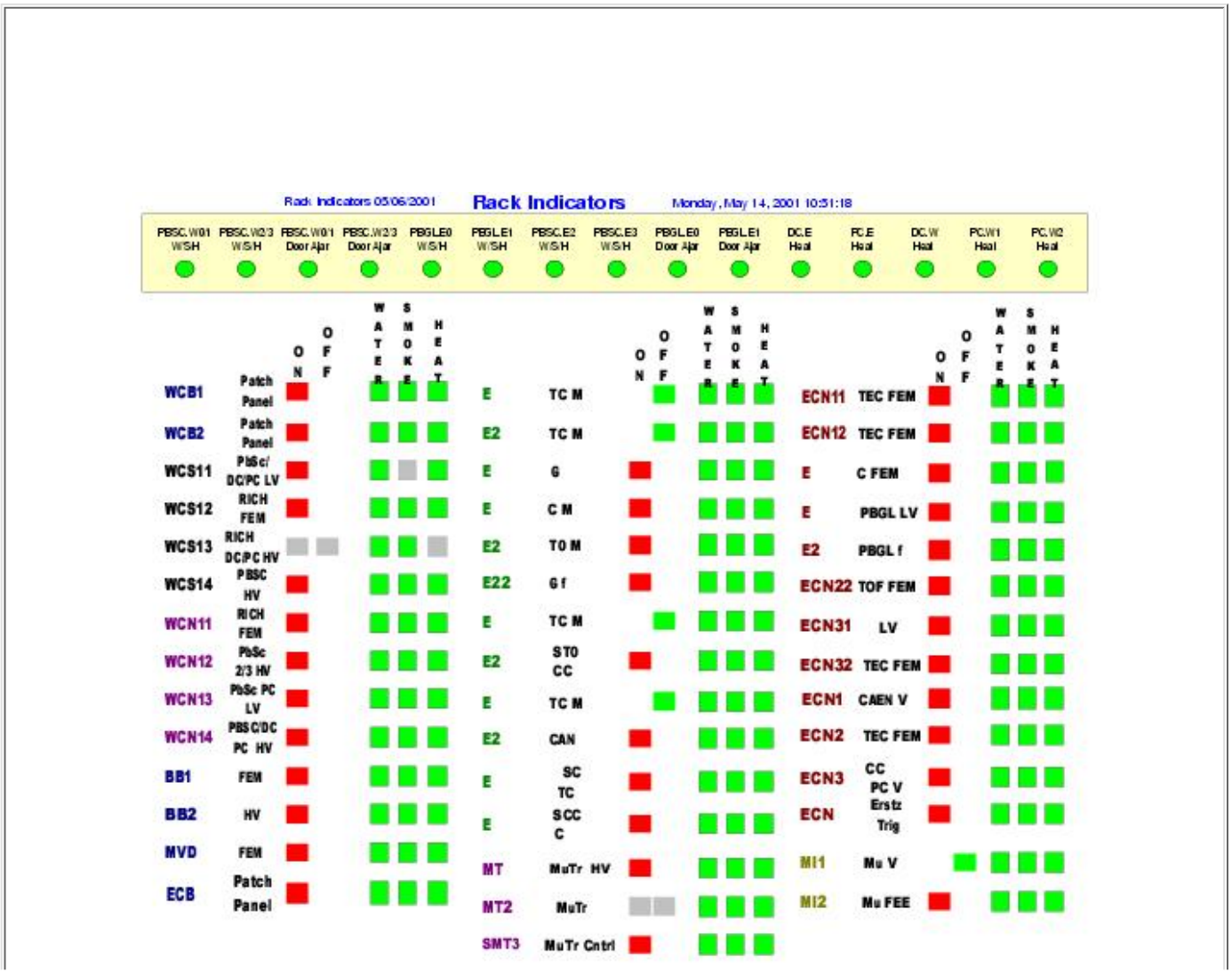
There are a few confusing behavior the use should know about the system.

- **The response of the system is *VERY SLOW*. Don't push the button frequently.**
- **When you push a ON/OFF button, it changes its color to PINK and stayed as "pushed down" positon. However, if you close the page and lauch it again, the appearance of the button is "pop up", but The color of the button is PINK.**
- **If a ON/OFF switch is PINK and "pop-up" state, you have to push it twice to turn the channel OFF. The first push makes the button PINK and "pushed down" position. The second push pop up the button, and then the channel is turned OFF. Yes, this behavior is *VERY CONFUSING* but we have to accept this feature of the system.**

There is a more explanations on RMCS in RCMS section of the manual.

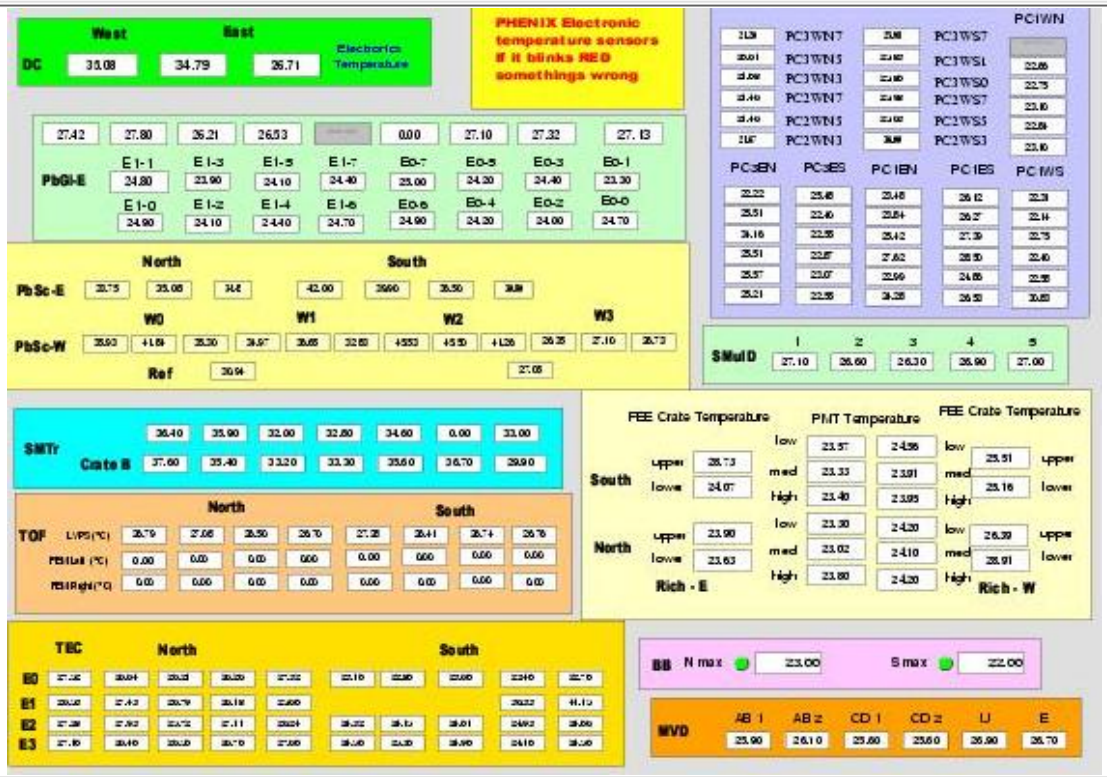
In the following, the pages of each subsystems are shown, with some explanations (if it is available). (The page images were captured on 5/14/2001. Some of the explanation are copied from the RUN-1 manual, and can be outdated.)

Rack Indicator 



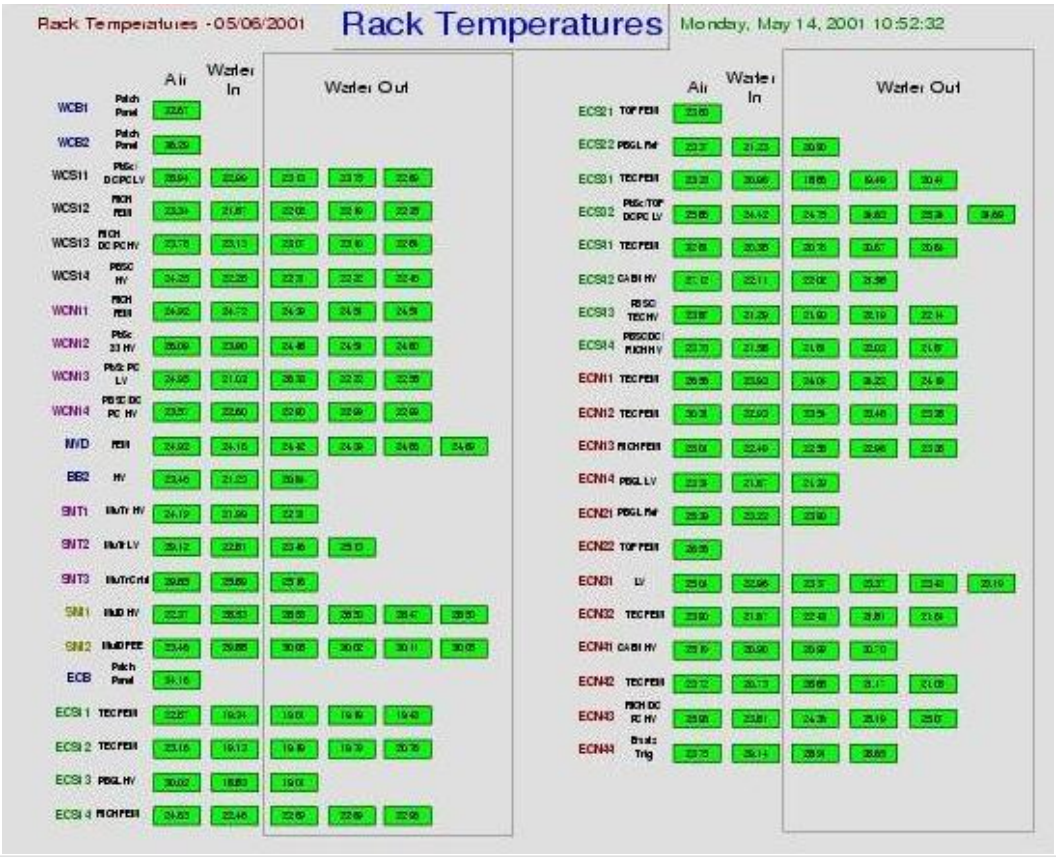
This is a summary page of all electronics rack in the IR

Electronics Temperatures



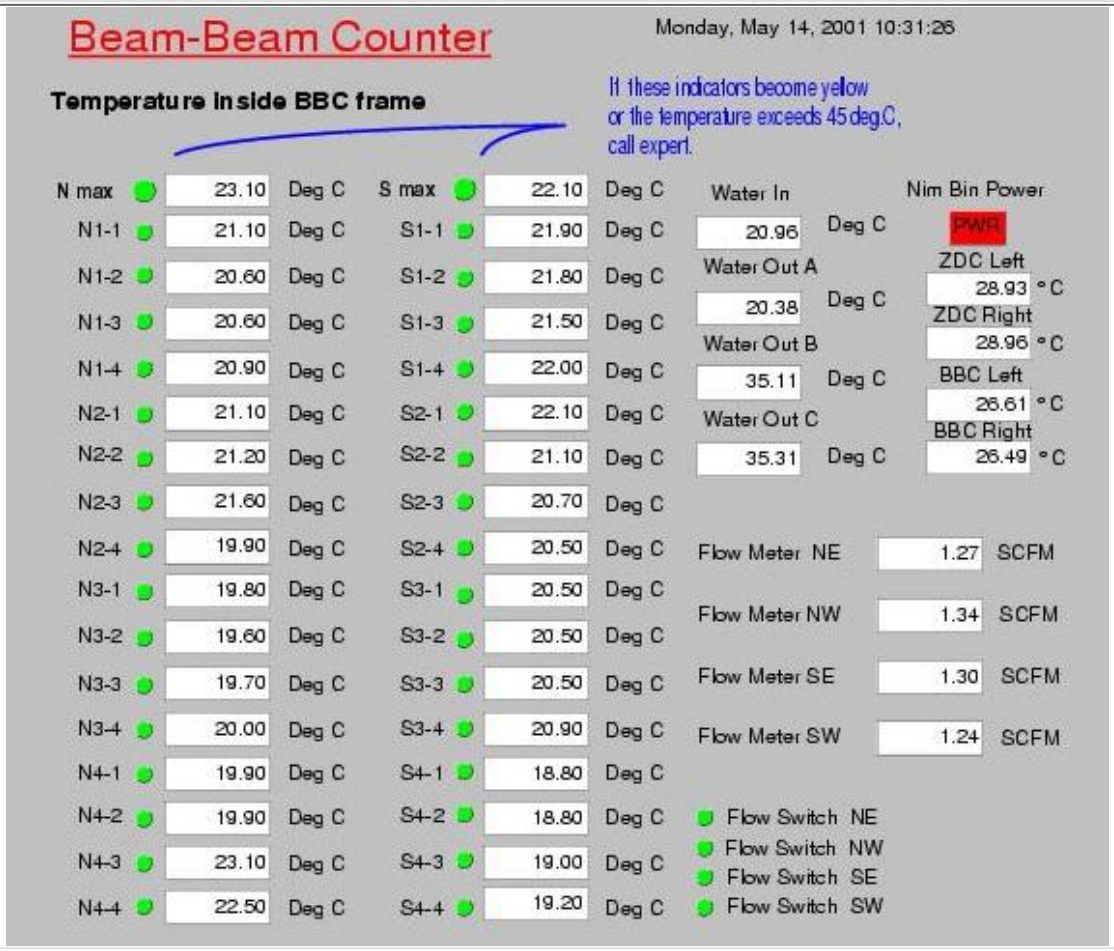
This is a summary page of all electronic temperatures.

All Temperature



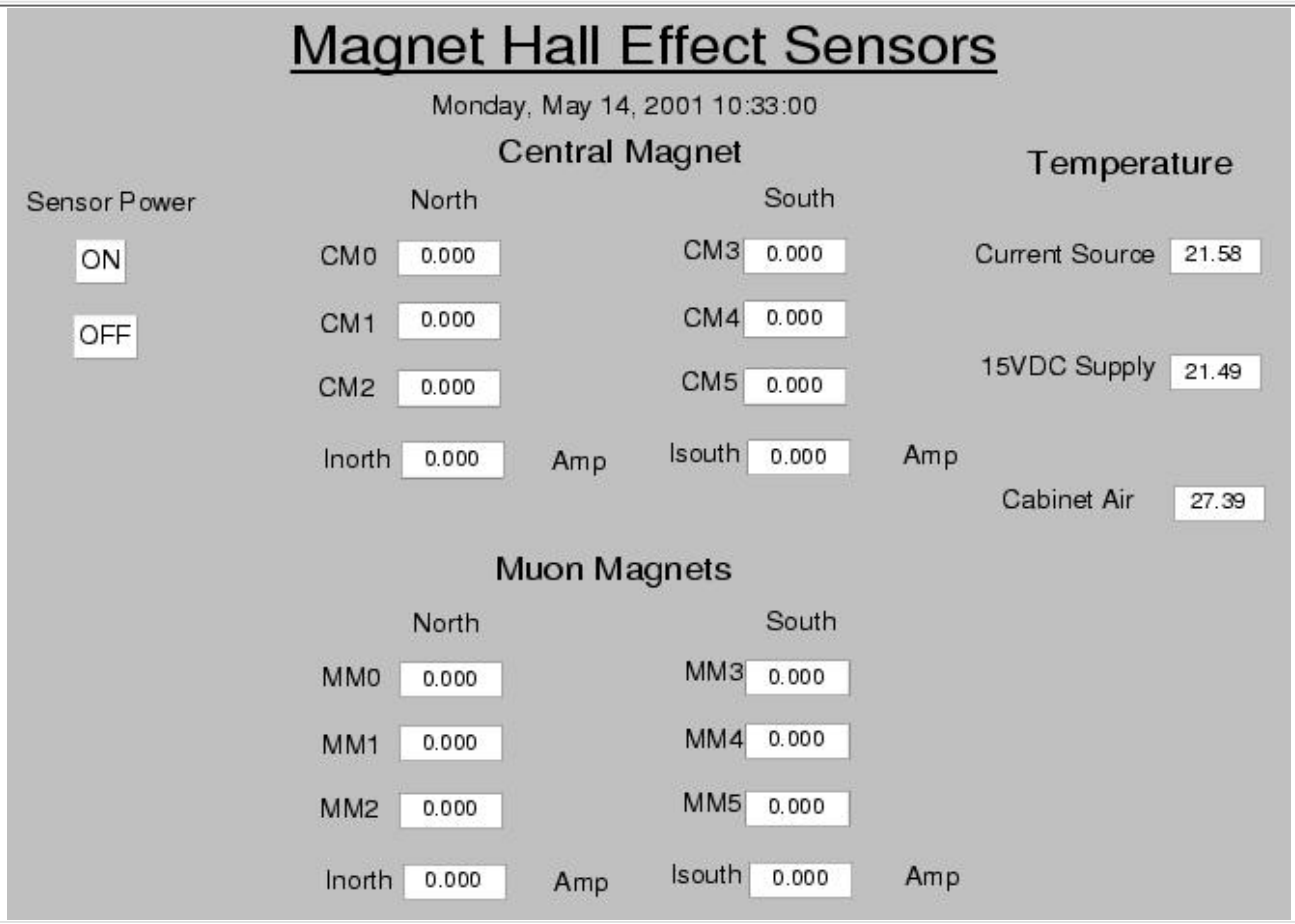
This is a summary page of all electronic temperatures.

Beam Beam Counter 



I have not received a description yet, shift persons please go and ask this subsystem for a description of their LV system

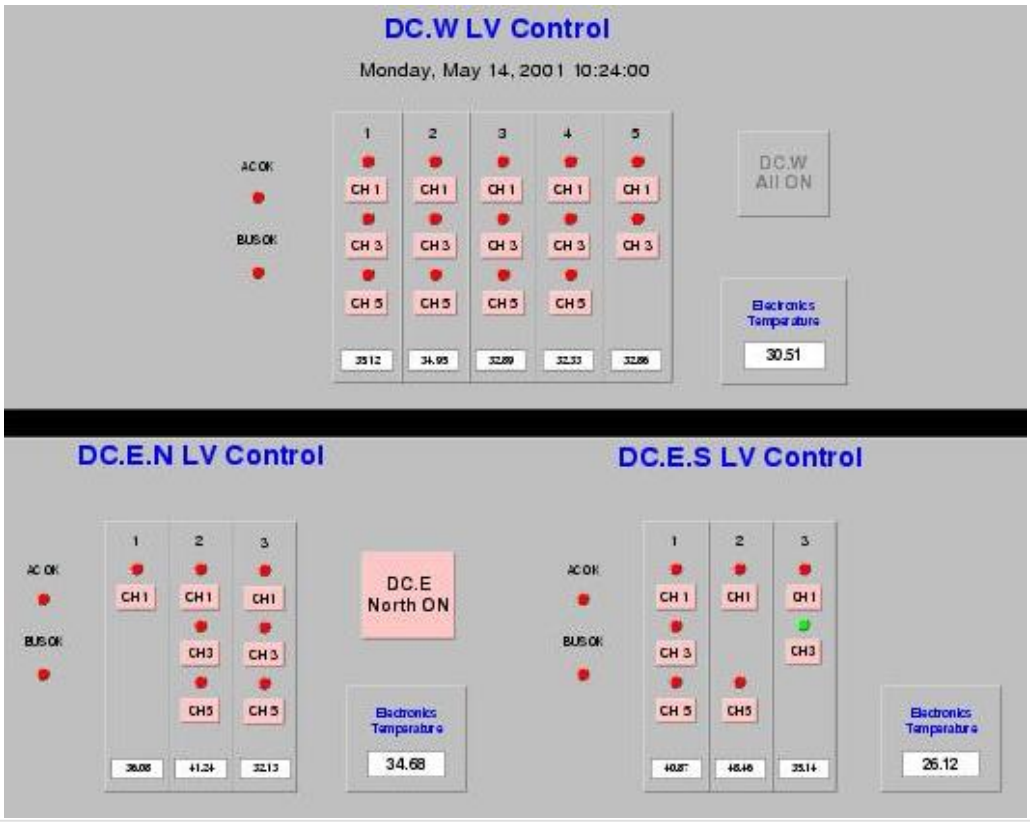
Central Magnet Hall Sensors



Central Magnet Hall Sensors

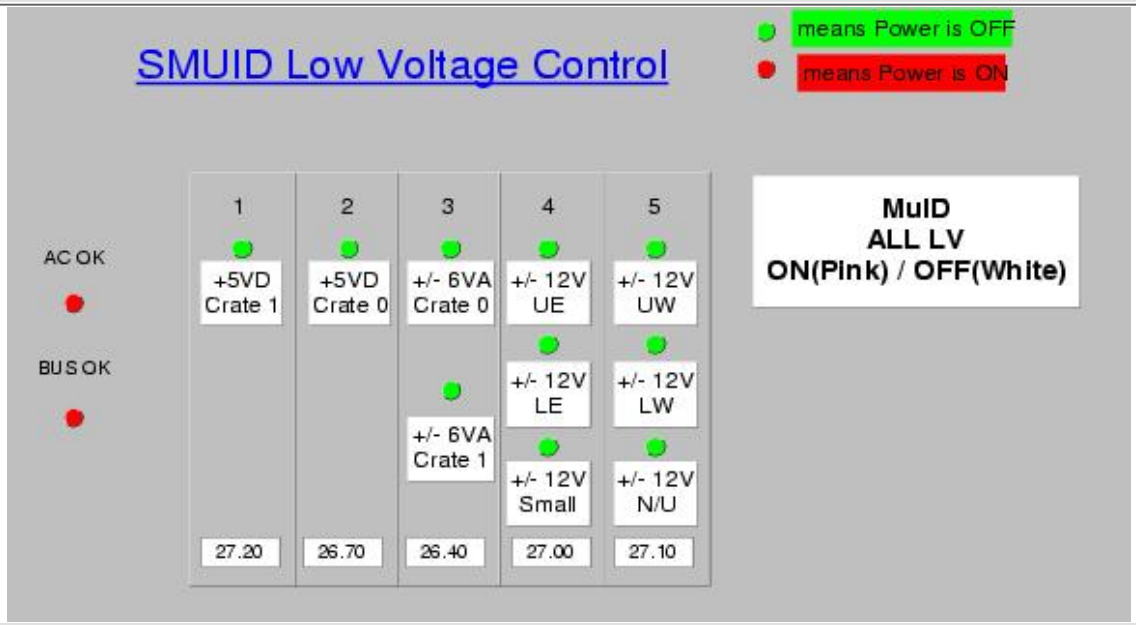
There are six Hall probes inside the Central Magnet to monitor the field. They are not yet filly calibrated, so e.g. HP0 reads -0.84 and HP3 reads 0.714 for full field.
Achim Franz, July 26, 2000

Drift Chamber



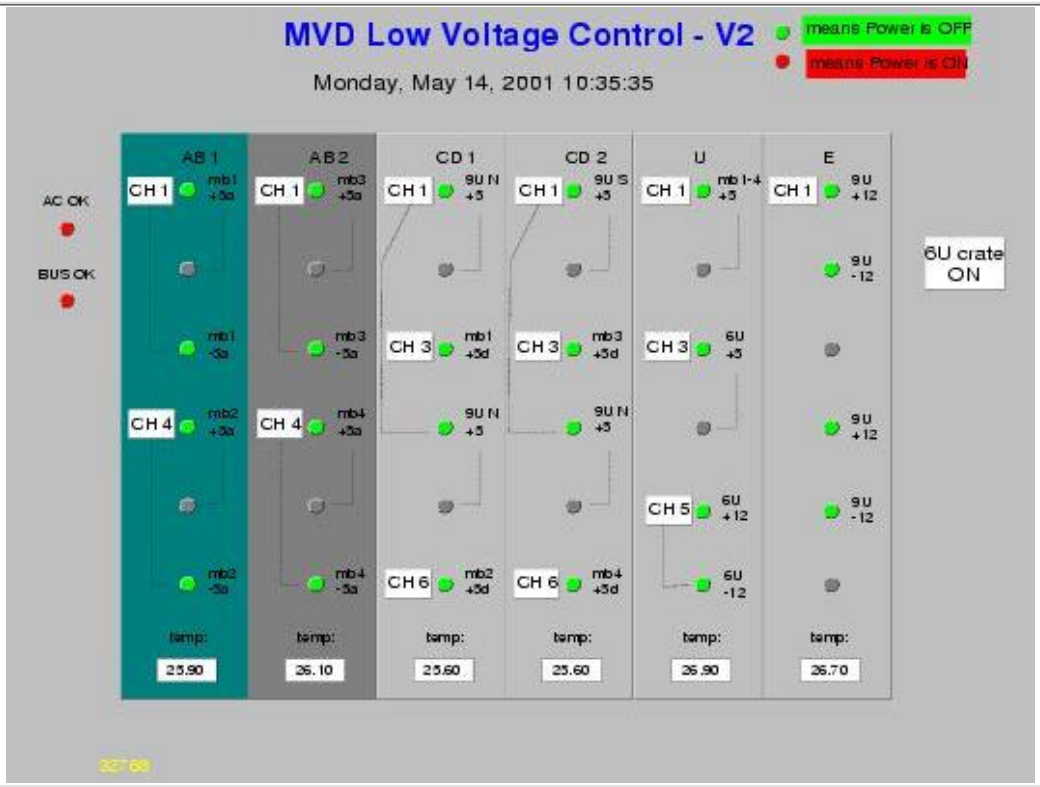
The Drift Chamber subsystem requires 7 LV supplies for each side of the DC (North and South). On the West Carriage all the power supplies are located in a single cabinet and thus there is a single block of 14 buttons for DC West. On the East Carriage, the supplies span two cabinets and thus there are 7 buttons for north and 7 buttons for south.
To operate either DC, turn all 14 buttons (they should depress and turn pink). The Small LED indicators above each button wil turn red once the voltage is within the nominal operating range.

Muon ID



I have not received a description yet, shift persons please go and ask this subsystem for a description of their LV system

Multiplicity Vertex Detector



I have not received a description yet, shift persons please go and ask this subsystem for a description of their LV system

PbGl EmCal

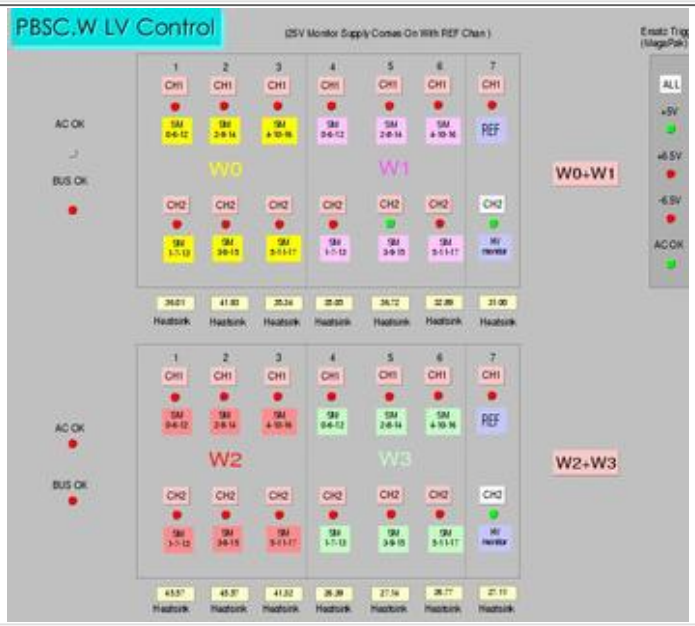
There are two different kinds of LV power controls for the PbGl.
1) LV for the PbGl HV system
The two boxes on the left side of the screen control the LV for the PbGl HV system. The upper controls sector E1 (SE1), the lower one sector E0 (SE0), which is not used during the run 2000. There are Start and Stop buttons, which automaticly turn on/off the powersupplies. Below the buttons are the readouts of the two used power supplies for each sector. The left one give the output of the 5V powersupply and should read between 5 and 5.5 (V). The left one gives the output of the 55V power supply (divided by 10). This should show around 5.6.

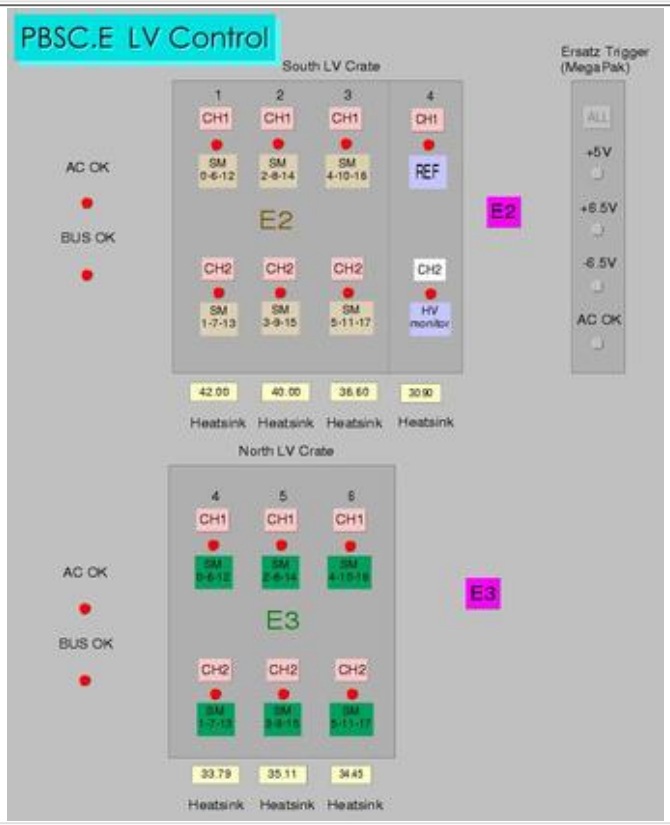
!!! DO NOT switched off these power without contacting the PbGl experts first !!!

2) LV for the FEMs
The main part of the window is occupied by the FEM LV controls. There are 8 LV modules used by the PbGl (1-4 for sector E1, 5-7 for sector E0 (not used in 2000) and 8 for the reference FEMs).
The status of the power supply is changed by pressing the corresponding button (SE1-x). After a delay of a few second the

status light above the button should show the new state (green: power off, red: power on). There are also thermo element readings of the heatsinks of each LV module below the buttons. They should read between 30 and 50 for an active module. Two statuslight on the top left show the AC power status and the LV crate bus status (attn: red means OK !).

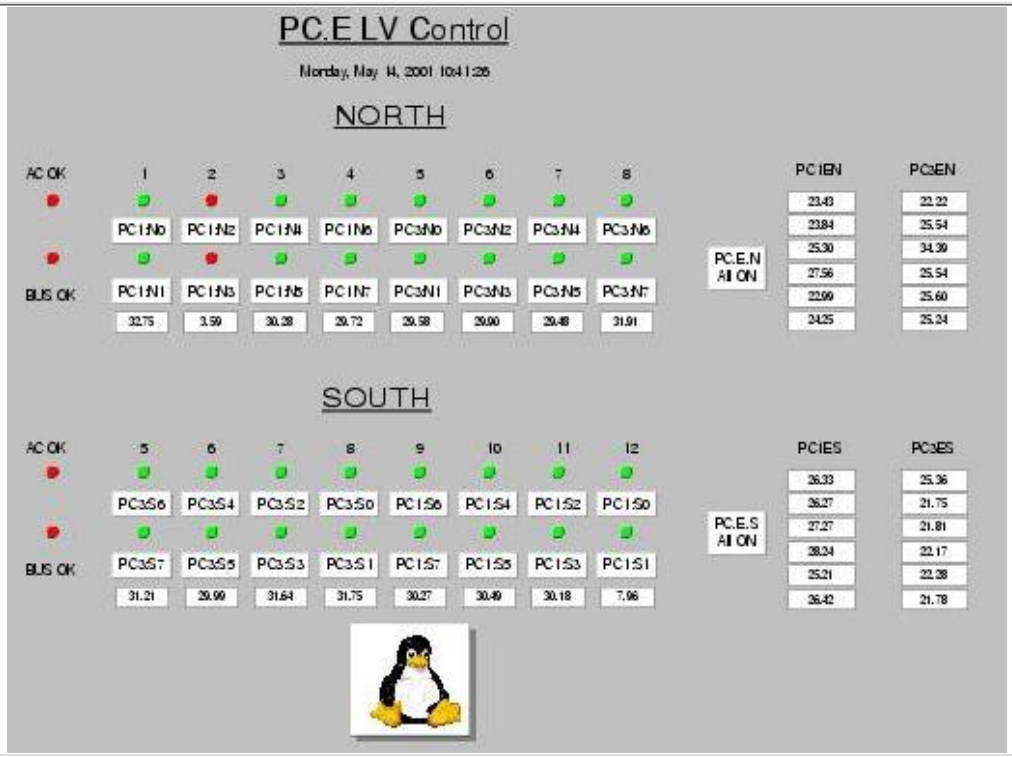
PbSc EmCal

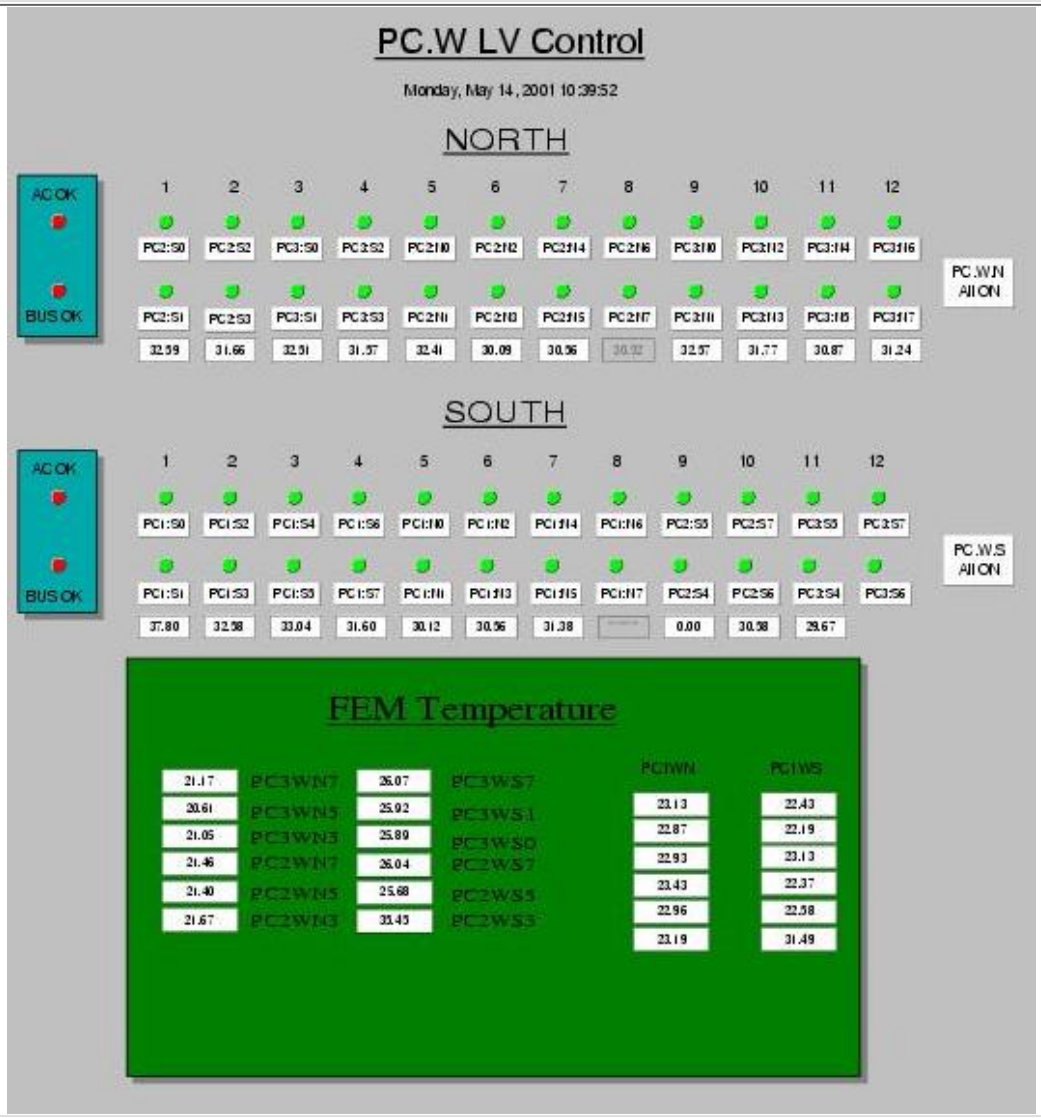




I have not received a description yet, shift persons please go and ask this subsystem for a description of their LV system

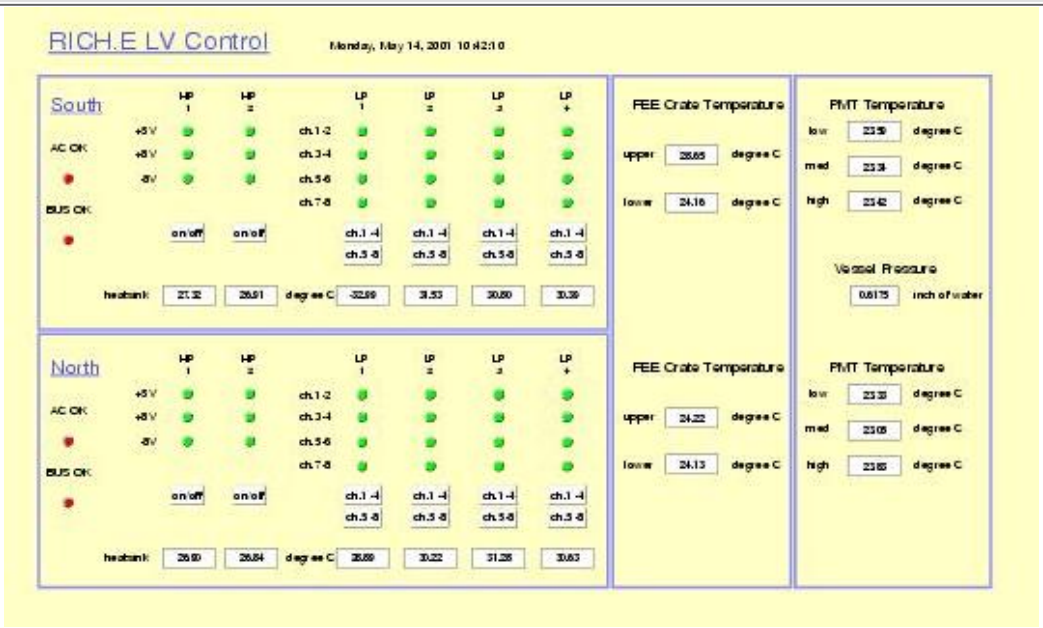
Pad Chamber


PC.E LV Control
Monday, May 14, 2001 10:41:26
NORTH
AC OK
BUS OK
1
2
3
4
5
6
7
8
PC1:N0
PC1:N2
PC1:N4
PC1:N6
PC3:N0
PC3:N2
PC3:N4
PC3:N6
PC1:N1
PC1:N3
PC1:N5
PC1:N7
PC3:N1
PC3:N3
PC3:N5
PC3:N7
32.75
3.59
30.28
29.72
29.58
29.90
29.48
31.91
PC.E.N All ON
PC1EN
PC3EN
23.43
23.84
25.30
27.56
22.99
24.25
22.22
25.54
34.39
25.54
25.60
25.24
SOUTH
AC OK
BUS OK
5
6
7
8
9
10
11
12
PC3:S6
PC3:S4
PC3:S2
PC3:S0
PC1:S6
PC1:S4
PC1:S2
PC1:S0
PC3:S7
PC3:S5
PC3:S3
PC3:S1
PC1:S7
PC1:S5
PC1:S3
PC1:S1
31.21
29.99
31.64
31.75
30.27
30.49
30.18
7.96
PC.E.S All ON
PC1ES
PC3ES
26.33
26.27
27.27
28.24
25.21
26.42
25.36
21.75
21.81
22.17
22.38
21.78


PC.W LV Control
Monday, May 14, 2001 10:39:52
NORTH
AC OK
BUS OK
1
2
3
4
5
6
7
8
9
10
11
12
PC2:S0
PC2:S2
PC3:S0
PC3:S2
PC2:N0
PC2:N2
PC2:N4
PC2:N6
PC3:N0
PC3:N2
PC3:N4
PC3:N6
PC2:S1
PC2:S3
PC3:S1
PC3:S3
PC2:N1
PC2:N3
PC2:N5
PC2:N7
PC3:N1
PC3:N3
PC3:N5
PC3:N7
32.59
31.66
32.51
31.57
32.41
30.09
30.56
32.57
31.77
30.87
31.24
PC.W.N All ON
SOUTH
AC OK
BUS OK
1
2
3
4
5
6
7
8
9
10
11
12
PC1:S0
PC1:S2
PC1:S4
PC1:S6
PC1:N0
PC1:N2
PC1:N4
PC1:N6
PC2:S5
PC2:S7
PC3:S5
PC3:S7
PC1:S1
PC1:S3
PC1:S5
PC1:S7
PC1:N1
PC1:N3
PC1:N5
PC1:N7
PC2:S4
PC2:S6
PC3:S4
PC3:S6
37.80
32.58
33.04
31.60
30.12
30.56
31.38
0.00
30.58
29.67
PC.W.S All ON
FEM Temperature
21.17
20.61
21.05
21.46
21.40
21.67
PC3WN7
PC3WN5
PC3WN3
PC2WN7
PC2WN5
PC2WN3
26.07
25.92
25.89
26.04
25.68
25.45
PC3WS7
PC3WS1
PC3WS0
PC2WS7
PC2WS5
PC2WS3
PC1WN
23.13
22.87
22.93
23.43
22.96
23.19
PC1WS
22.43
22.19
23.13
22.37
22.58
31.49

The Pad Chamber LV window has three main panels (16 buttons each) where each panel controls one LV crate and each button controls the power to one FEM. The upper panel controls the entire PC1 West Arm. The Central panel controls half the PC1 East North Arm and half the PC3 East North Arm. The bottom panel controls half the PC1 East South Arm and half the PC3 East South Arm.
Panel 1.
West Crate (Rack WCS11) : PC1W
Arcnet node /dev/arc4 50-57 (PC1WN)
Arcnet node /dev/arc5 50-57 (PC1WS)
Panel 2.
North East Crate (Rack ECN31) : PC1EN & PC3EN
Arcnet node /dev/arc0 80-87 (PC1EN) & 96-103 (PC3EN)
Panel 3.
South East Crate (Rack ECS32) : PC1ES & PC3ES
Arcnet node /dev/arc2 80-87 (PC1ES) & 96-103 (PC3ES)
The temperature windows to the right of each panel shows the current temperature near the FEMs. These windows flashes red when the temperature reaches 55 degrees C. If this happens, please report immediately to PC expert. If no expert can be reached, please turn off corresponding Arm (e.g. if any window under PC1ES flashes red, turn off PC1ES:0-7).
Note that all LEDs that has an "X" over it should for the time being be ignored. All other LEDs should respond, if not, please report immediately to PC expert. Red LED means ON.

Ring Image Cherenkov

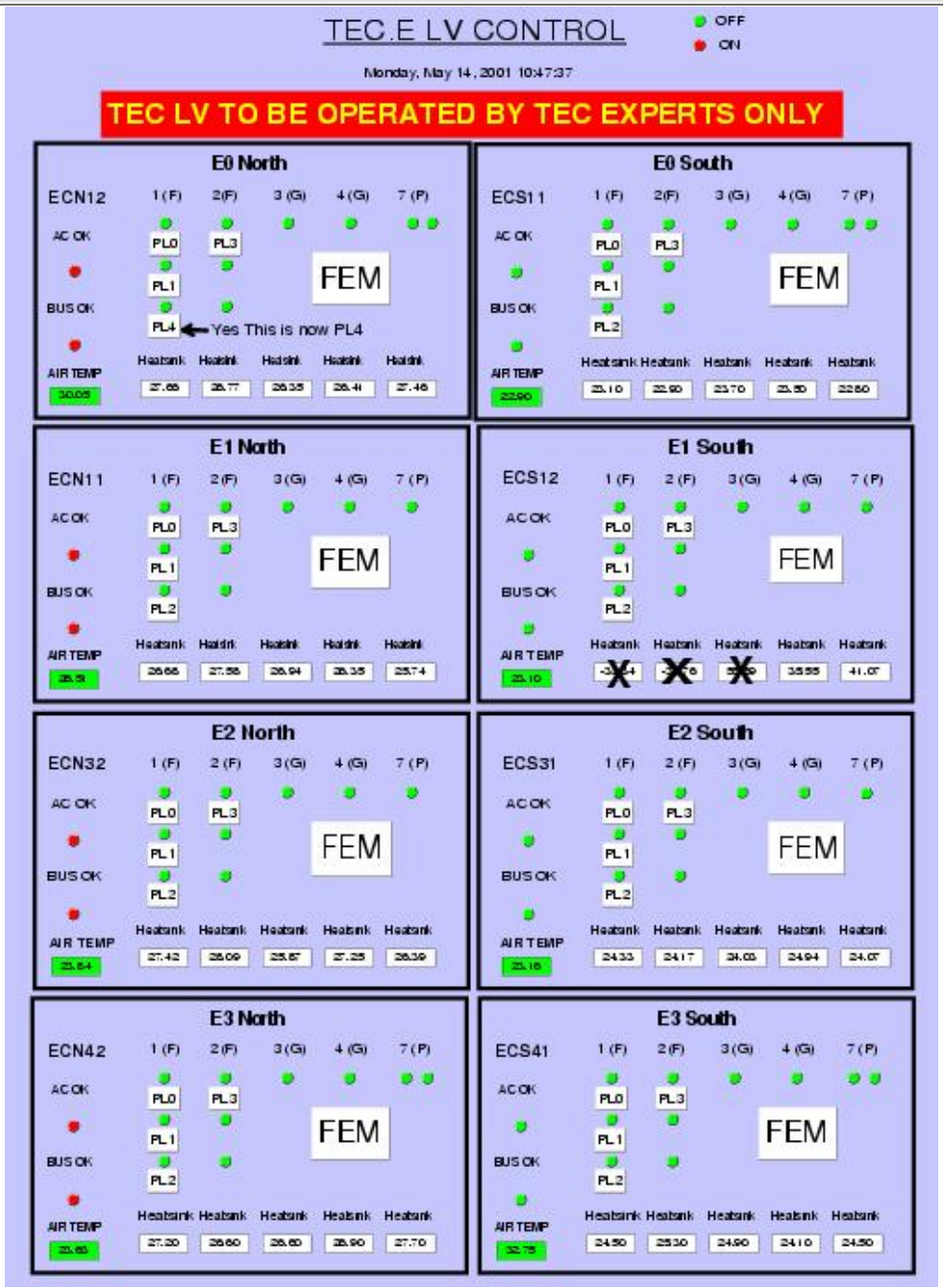


The RICH has two LV control and monitoring windows; one for each arm. Each window has four sections divided by blue lines.

1. south side LV crate control (upper left) Two high power LV modules for the FEE (HP 1-2) and four low power LV modules (LP 1-4) are controlled and monitored here. All "lights" should be red when the LV system is on. A temperature monitor window flashes in red when a LV module heats up above a threshold (currently set at 35 degrees C.).
2. north side LV crate control (lower left) Same as (1).
3. FEE crate temperature monitor (center) Temperature of the four FEE crates (two on south, two on north) is monitored here. A window flashes in red when a crate heats up above a threshold (currently set at 35 degrees C).
4. Vessel temperature and pressure monitor (right) Six temperature sensors (three on south, three on north) inside the RICH vessel are monitored here. A window flashes when a PMT supermodule heats up above a threshold (currently set at 35 degrees C). Gas pressure in the vessel is also monitored here. The window flashes in red when the pressure goes above a threshold (currently set at 1 inch of water).

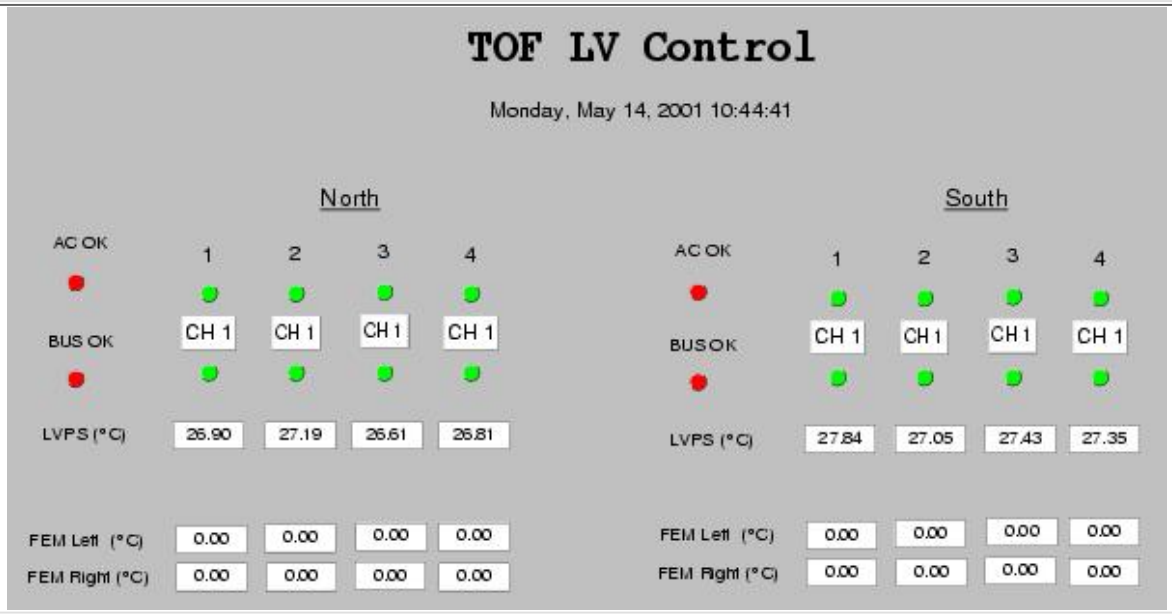
All non-working (not yet installed in most cases) channels are clearly marked by red rectangles and comments. Shift persons should see all "lights" are red (i.e. the LV system is working) in the section (1) and (2) and no temperature/pressure monitoring window flashing in red.

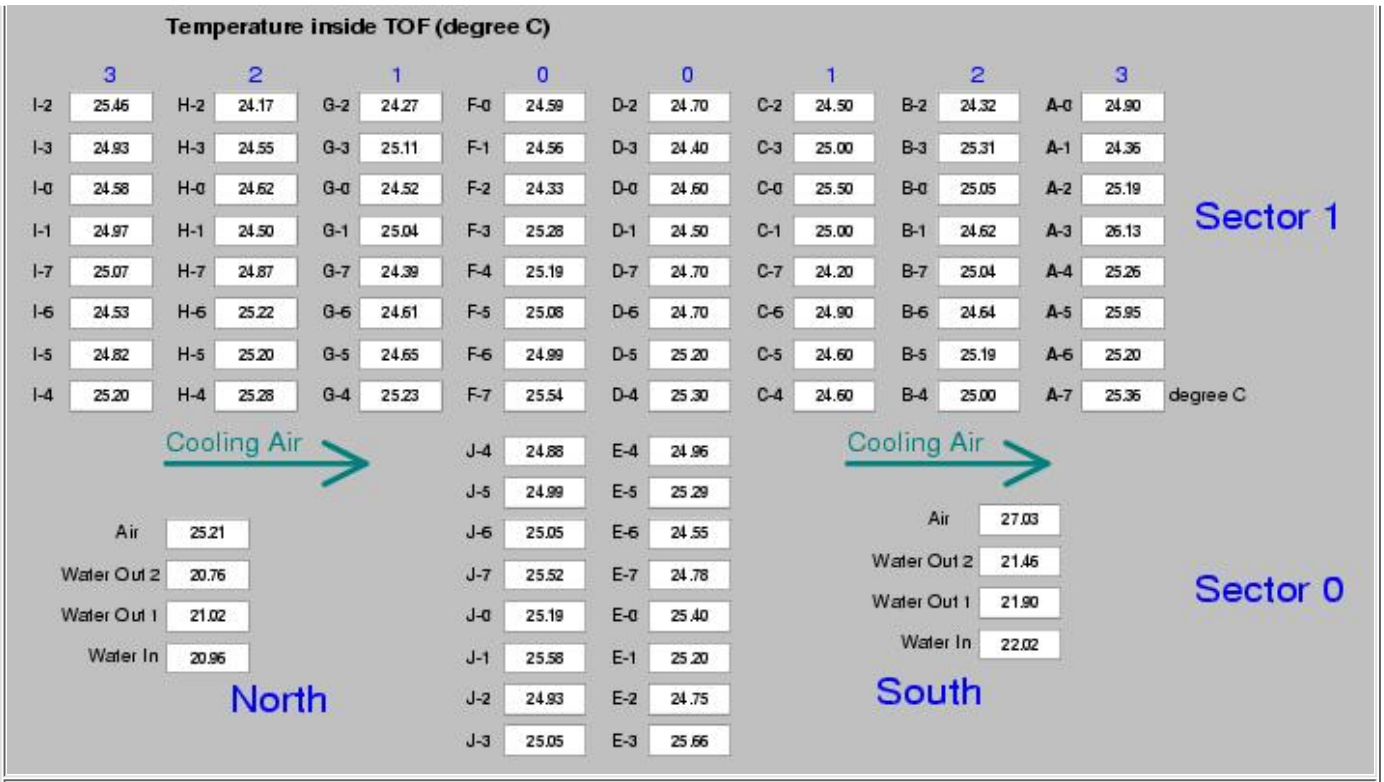
Time Expansion Chamber



PHENIX TEC LOW VOLTAGE CONTROL
General Description:
The Tec currently has power supplies for 2 of the 4 sectors installed on the East arm. The powered sectors are E1 and E2. These sectors are divided into to sides: a North and a South. Each half of the sector is powered by its own low voltage power supply. The TEC presently can only be turned on by TEC approved specialists. The F power supplies (those that power the Planes (pl 1,pl2, pl 3, pl 4), should be off unless a TEC specialist is present.(This is temporary until Phenix is in data taking conditions). FEM's can be left on all the time.
LV Control:
The TEC.E control panel is divided into 4 quadrants: 2 for E2 (ECN32 and ECS31) and 2 for E1 (ECN11 and ECS12). Within each section, there are several buttons. The row of buttons on the left are the controls of the pre-amps on individual planes of the TEC (PL1, PL2, PL3, PL4, and two NC (Not Connected)). The large button labeled "FEM" controls Power to the TEC FEM Boards. (Note the buttons labeled Bottom, Top, and Both are only used when trouble shooting the system) When powered the Lights should be red.
Temperature Readouts:
There are temperature readouts from the LV power supply located at the bottom of each quadrant. Typically the "F" ranges between 35-45, the "G" ranges between 35-45 and the "P" ranges from 40-55. A few on the readouts are malfunctioning. They have an "X" through them.
R.Pisani, June 12, 2000

Time of Flight





Time of Flight

1. LV control The Time of Flight subsystem requires 4 LV power supplies for each side of the TOF (North and South) on the East Carriage. Thus, there are 4 buttons for north and 4 buttons for south. To operate TOF, turn all 8 buttons on (they should depress and turn pick). The small 2 LED indicators (above and below each button) will turn red if the voltage is within the nominal operating range.
2. LV temperature monitor There are temperature monitors for each LV module below the LV control button. They should read between 30 and 55 for an active module. A window flashes in red when a crate heats up above a threshold.
3. FEE temperature monitor There are temperature monitor of both left and right side of FEM crate. A window flashes in red when a crate heats up above a threshold.

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

Main
Orders
Alarms
Contacts
1008
Gas
HV
LV
Online
RCMS
Trigger

Online Stuff

LogBook

Every shift is expected to maintain an electronic log of their activites as instructed in the online manual. For Run-00 this will be an electronic logbook linked to Objectivity; a first version is now available. Comments and suggestions to Purschke@BNL.GOV.

Run Control

An **updated**, but not yet complete, version of How To Fly Phenix , i.e. DAQ Instructions, (PDF version (209.7 kB, May 03, 2001), PS version (266.4 kB, May 03, 2001)) was provided by Jamie Nagle with further updates from A.Frawley and G.Martinez.
The **original** version of these notes by Barbara Jacak and Rob Pisani are still available.

Data quality monitor

This is actually part of the above manual, but it is important, that the shift crew actually runs this to monitor the basic parameters liek z-vertex, ... invoked by typing:daq_monitor on a linux box.
We also have separate online monitoring tasks from different subsystems. Here is a copy from a mail to run-l, which will change soon as we combine stuff into a "real" monitoring task.

```
As discussed in the EOG meeting I have collected a some sort of online
monitoring from some subsystems, but it's difficult to test without a
dd_pool. I set up windows on the phoncs19 whicj is as many PC's set up
wrong so I need to run from other machines but that's a different story.
The stuff is on:
/home/monitoring/
under root type:
.x dc_mon.C                                 for DC monitoring, maybe me
.x disp.C                                   for BB, not updating
.x TofOnlineMon.C                           for TOF, not sure it works
-------------------------------------------------------------------------
under /home/monitoring/TEC you can do from root:
.x noisemon.C(10)                            seems to work (10) = 10 events
or
.x montec.C                                  I would like to get the TEC
                                             writeup on this.
-------------------------------------------------------------------------
under /home/monitoring/RICH you can type:
RichOnlineMonitor                            there is a README file as well.
-------------------------------------------------------------------------
```

- TEC monitoring
- RICH stuff by A.Frawley

DC Event Monitoring

The drift chamber group (Federica Ceretto) has set up files to look at DC events from data files. Click here to read a copy of the "README" file (5.8 kB, May 03, 2001).

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

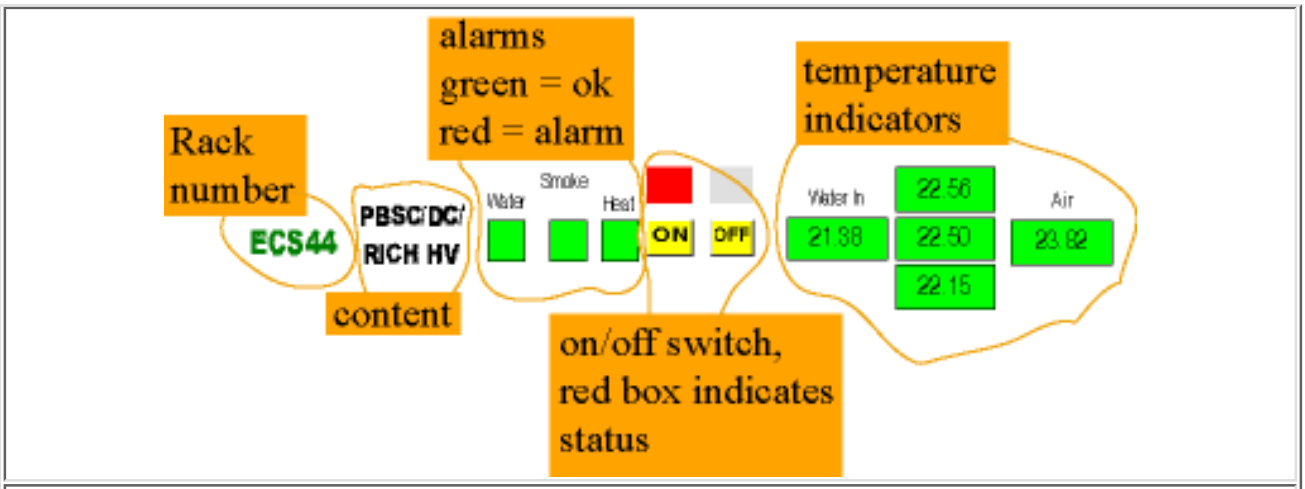
- Main
- Orders
- Alarms
- Contacts
- 1008
- Gas
- HV
- LV
- Online
- RCMS
- Trigger

Rack Control and Monitoring System

Complete Rack Control and Monitoring System (RCMS) Window

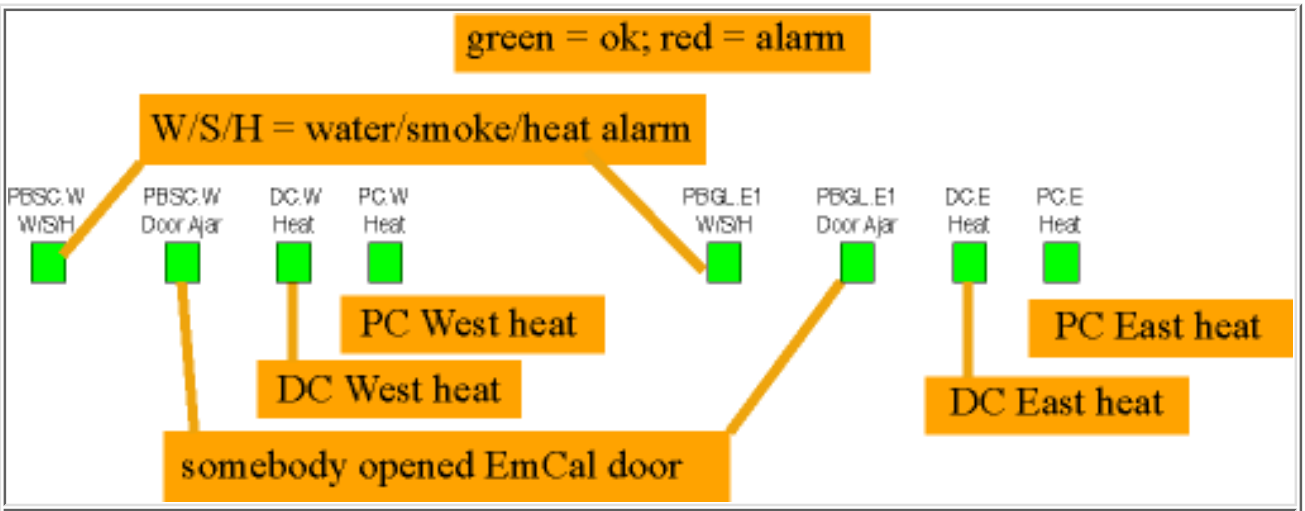
The Rack Control and Monitoring System (RCMS) talks to the ADAM modules in each rack. It shows the status of each rack in the IR, including alarms and temperature indicators. Colors in the rack numbers indicate West Carriage, East Carriage North and South, and central racks.

Detail from the RCMS Window



Each rack has a panel as shown above. From left to right there is the rack number (ECS44 = East Carriage, South Side, 4th platform, rack 4).
A short list indicates what the rack contains HV, LV, FEMs, ...
The next three squares are alarm indicators, when the internal rack sensors detect smoke, water or over-temperature these will blink red and the corresponding alarm will show on the alarm panel.
Next are the On and OFF buttons, a red square above ON means the rack is powered, a green square above OFF means the rack is OFF.
On the right for each rack are temperature indicators, their number and placement varies from rack to rack.

Detail from the RCMS Window



In the upper part of the RCMS panel are some special indicators for water - heat - temperature sensors inside the EMCals, an alarm if somebody opened an EMCal access door and temperature sensors for the drift and pad chamber, here I'm not sure yet where they are connected.

Original Run-00 version by A. Franz. Achim@BNL.GOV
Run-2001 version edited by Y. Akiba akiba@BNL.GOV

- Main
- Orders
- Alarms
- Contacts
- 1008
- Gas
- HV
- LV
- Online
- RCMS
- Trigger

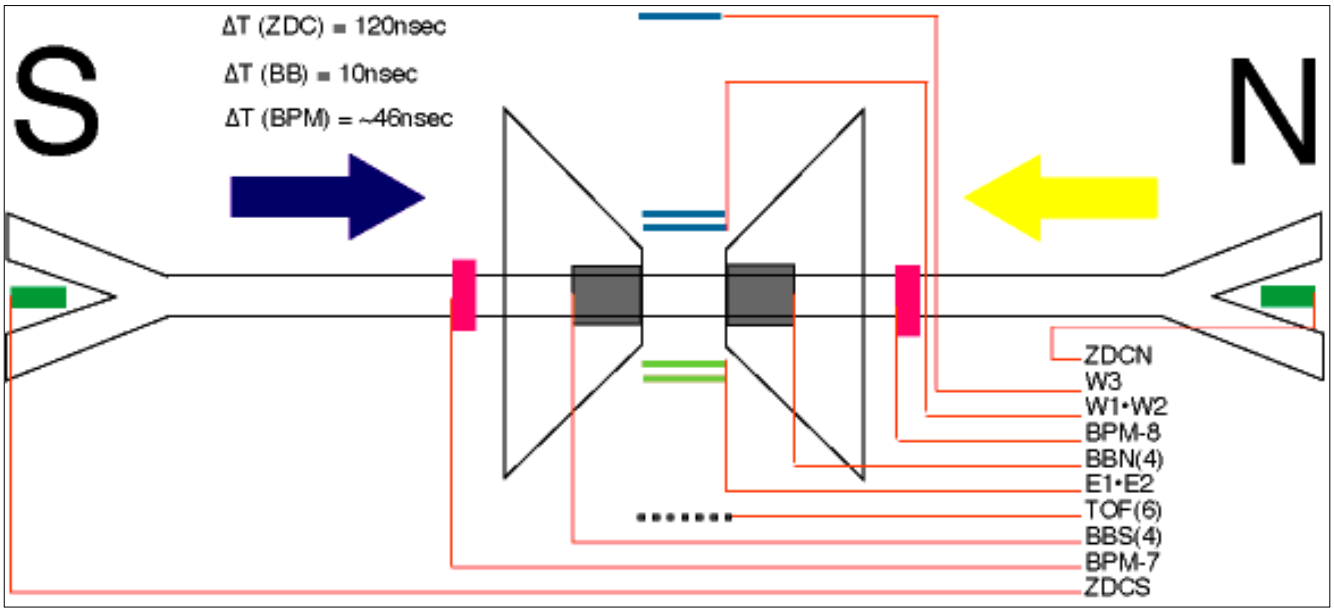
Trigger
GI1

Documentation about Level-1 can be found at this web page .

Trigger Configuration

There is a PDF file from John Lajoie containing the current all-in-one Phenix Trigger Configuration (76.3 kB, May 03, 2001) file with the list of triggers.

Several signals come to the CR to serve as a first trigger signals for testing and timing-in of detectors. There are the two ZDCs 4 PMT signals from each BBC, 5 scintillator counters (W1, W2, ...) and 6 signal from TOF slats.



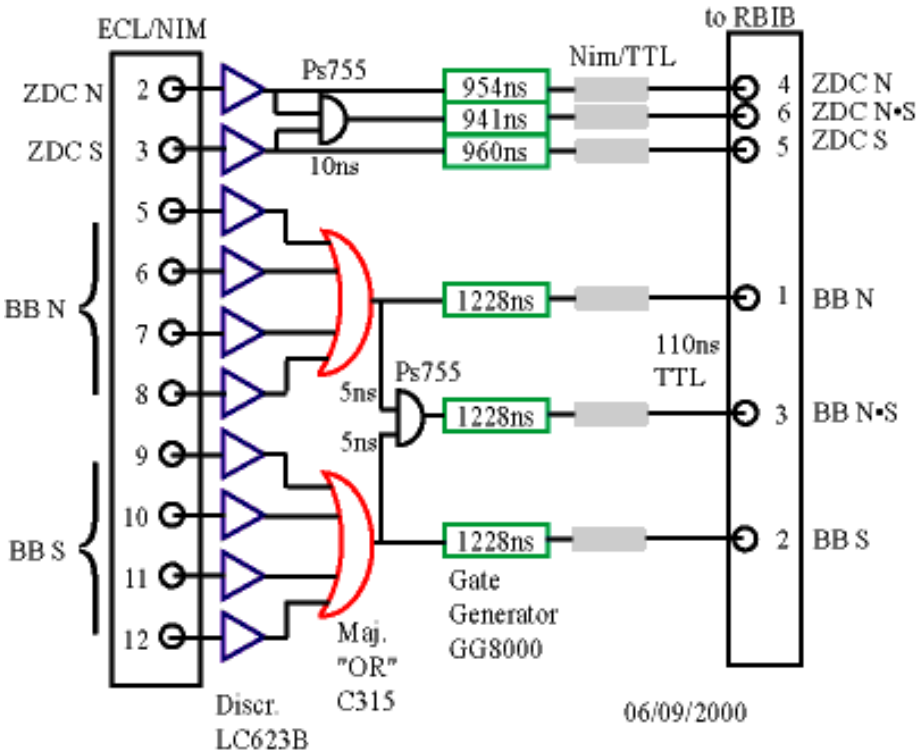
Scalers send to RHIC

Inp #	Signal Name	Comments
1	ZDC "B*Y*FP"	Coincidence gate=15ns, threshold=~25GeV, FP=Fill Pattern (August 10th)
2	ZDC "B*FP"	Threshold=~25GeV, B=Blue facing = North (August 10th)
3	ZDC "Y*FP"	Threshold=~25GeV, B=Blue facing = South (August 10th)
4	ZDC "N*S*BPM7"	Coincidence gate=40ns, threshold=~10GeV
5	BBC "N*S"	Coincidence gate =5ns (valid from Aug. 7), Mult=2 out of 4
6	BBC "N"	Multiplicity=2, OR of 4 PMTs
7	BBC "S"	Multiplicity=2, OR of 4 PMTs
8	ZDC "N*S"	Coincidence gate=10ns, threshold=~25GeV (valid from July 25)
9-13	PinDiodes	These are 8 small pindiodes around the beampipe to measure background rates
14	ZDC "N*S"	Coincidence gate=40ns, threshold=~10GeV (August 10th)
15	ZDC "N"	Threshold=~10GeV (August 10th)
16	ZDC "S"	Threshold=~10GeV (August 10th)

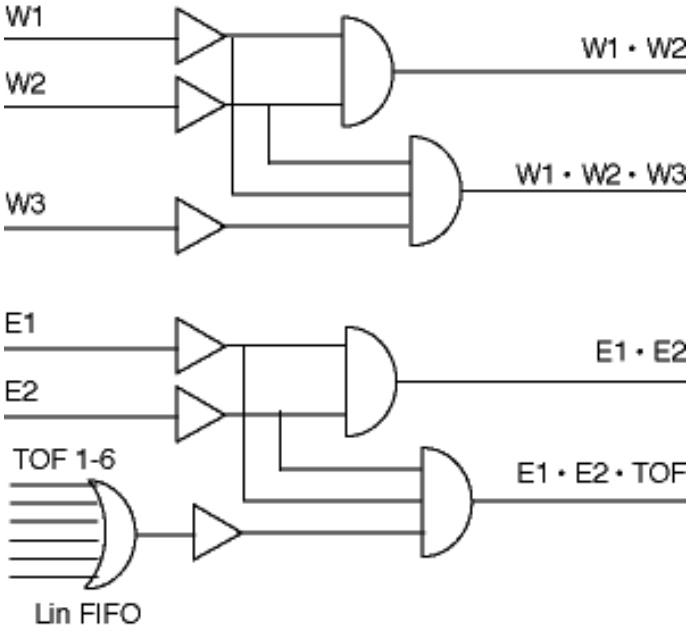
Inputs to the Reduced_Bit_Input_Board (RBIB)

Input	Name	Description
1	BB N	more than 2 hits of the 4 PMTs, 5nsec gate
2	BB S	more than 2 hits of the 4 PMTs, 5nsec gate
2	BB N*S	5nsec gate
4	ZDC N	linear sum of the 3 PMTs, final threshold will be 10GeV
5	ZDC S	linear sum of the 3 PMTs, final threshold will be 10GeV
6	ZDC N*S	coincidence od ZDC N and S
7	W1*W2	100ns coincidence of two scintillators on the West side, a bit below beam height
8	W1*W2*W3	100ns coicidence of W1 and W2 with W3 in front of EMCal sector W0
9	E1*E2	100ns coincidence of two scintillators on the East side, just below beam height
10	E1*E2*TOF	100ns coicidence of E1 and E2 with an OR of 6 scintillator slats of W! TOF
11	BPM 7	delayed coincidence of the South side BPM signal with itself, should provide a trigger when a Yellow and Blue bunch passed by the Phenix IR
12	BPM 8	delayed coincidence of the North side BPM signal with itself, should provide a trigger when a Yellow and Blue bunch passed by the Phenix IR
13		
14		
15		
16	EMCal Muon	Internal EMCal Muon trigger; align to BBLL1

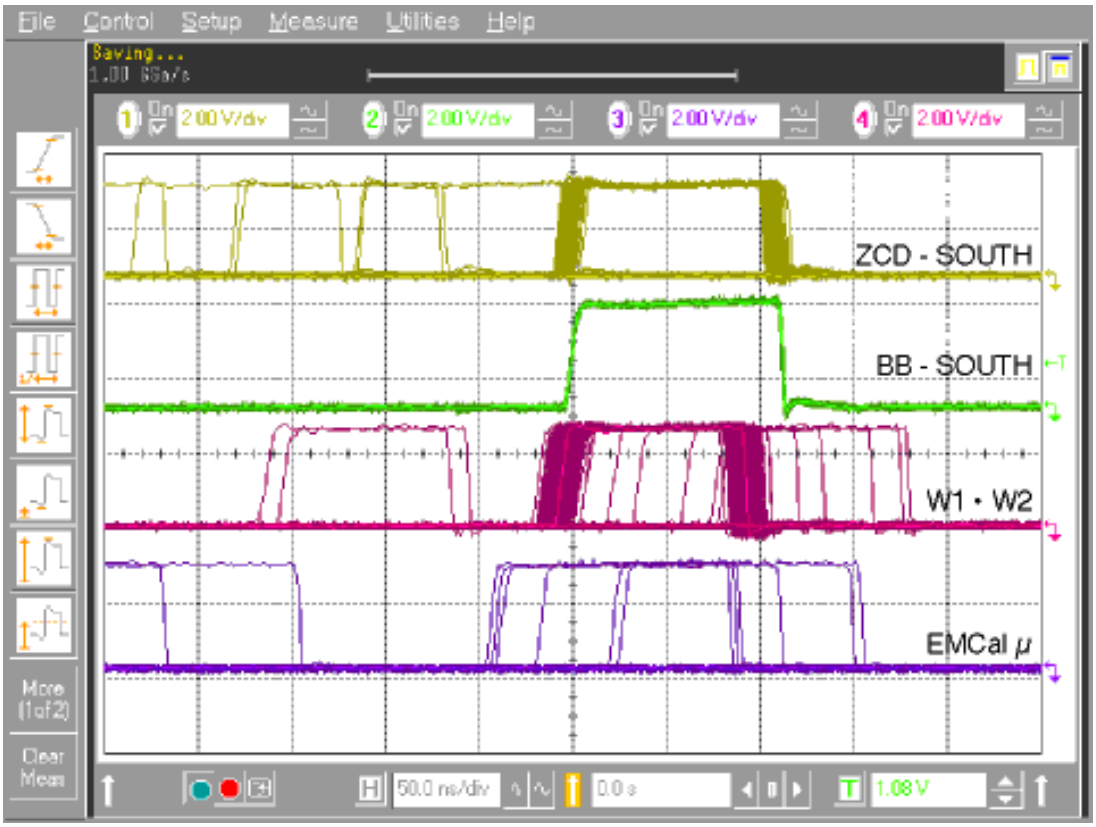
The diagram below shows the "Blue Logic" for the BB and ZDC signals going into the RBIB.



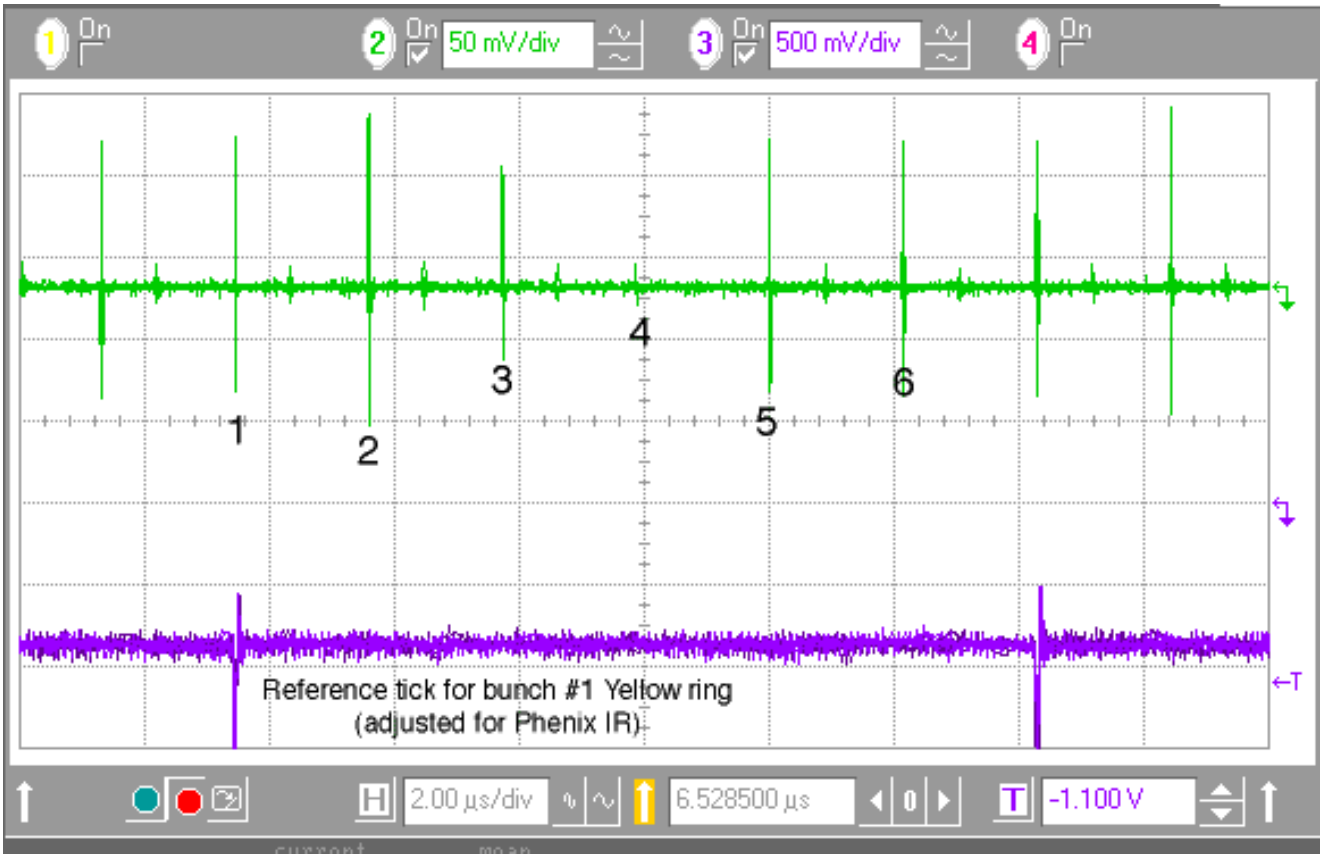
The diagram below shows the "Blue Logic" for the 5 scintillator counters (W1, W2, ...) and 6 signal from TOF slats. The timing information will be added later.



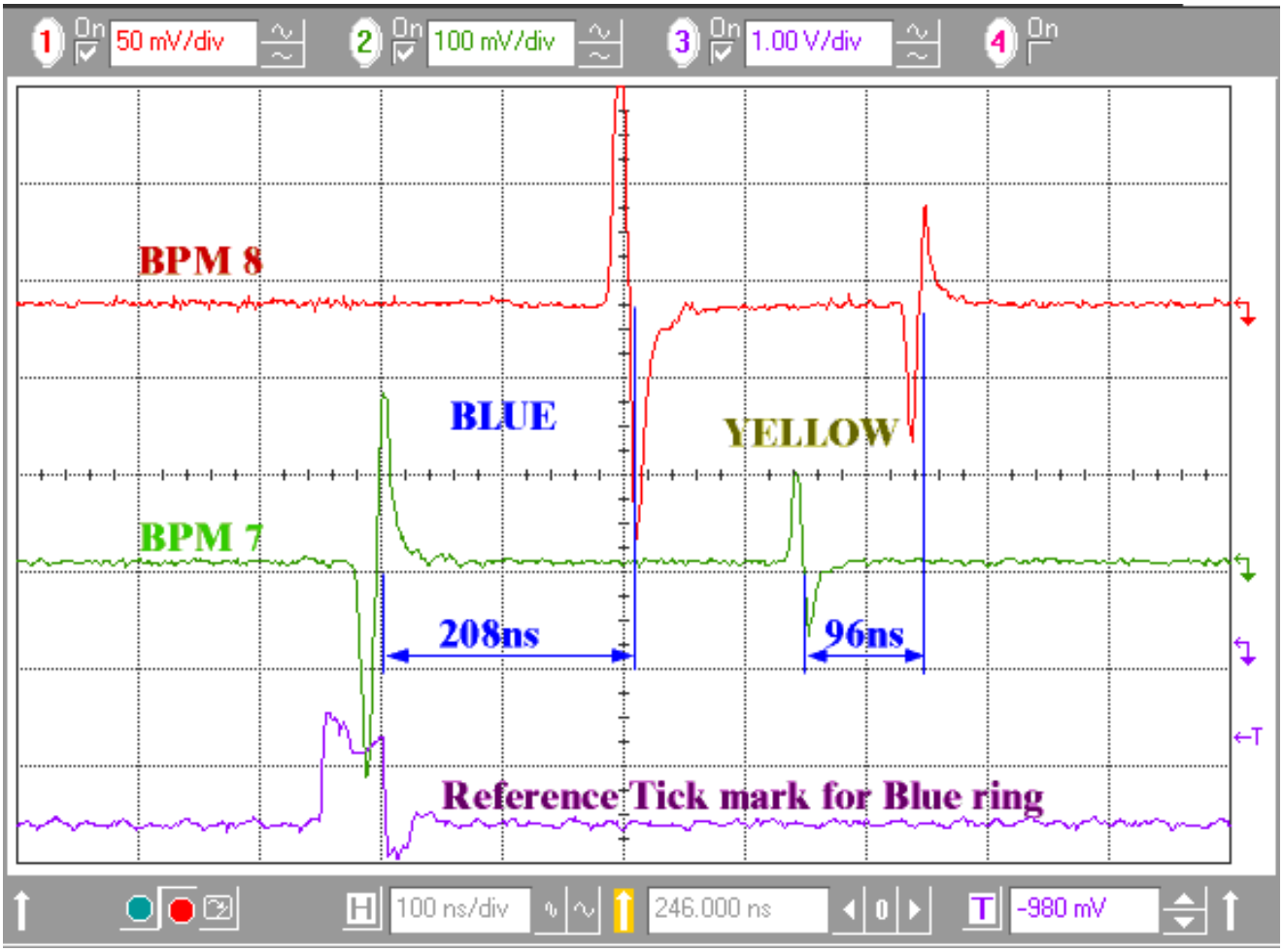
The image below shows a screen shot from May 31st 2000, when several trigger signal (100ns TTL) were aligned as input to the RBIB board. There is a expected jitter in the signals coming from the bunch length.



One of the signals we get from RHIC is a reference tick for "Bunch 1" passing by. Currently the fourth bunch in the yellow ring is low in intensity. Below is a picture showing the reference tick at the "Master Timing Module" and in green above signals from the "7 o'clock" Beam Position Monitor (BPM).



The picture below shows three traces, from the top: "8 o'clock" BPM, "7 o'clock" BPM and the reference tick for the blue ring (see above). There was beam in both rings but not aligned at the Phenix IR so we signals for both bunches passing by in both BPMS. The mystery is: why do we always see the "7 o'clock" BPM first ?? The answer is simple, the signal delay is very different. We measured 208 and 96 ns as the time difference, which should be the the TOF between the BPMs plus the difference in delay in one and the difference in delay minus the TOF in the other. The BPMs are 17m or 56ns apart which results in a delay difference of 152ns.



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